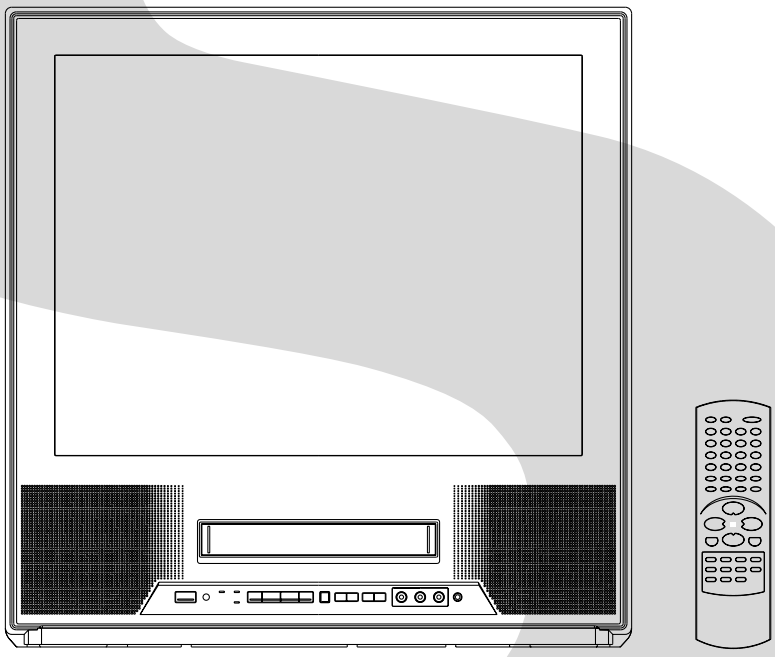
TOSHIBA

FILE NO. 140-200011

SERVICE MANUAL

COLOR TELEVISION/ VIDEO CASSETTE RECORDER

MV20FK3



SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. AVOID AN ELECTRIC SHOCK

There is a high voltage part inside. Avoid an electric shock while the electric current is flowing.

3. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.
Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a ⚠ mark, the designated parts must be used.

4. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

5. TAKE CARE TO DEAL WITH THE CATHODE-RAY TUBE

In the condition that an explosion-proof cathode-ray tube is set in this equipment, safety is secured against implosion. However, when removing it or serving from backward, it is dangerous to give a shock. Take enough care to deal with it.

6. AVOID AN X-RAY

Safety is secured against an X-ray by considering about the cathode-ray tube and the high voltage peripheral circuit, etc.
Therefore, when repairing the high voltage peripheral circuit, use the designated parts and make sure not modify the circuit.
Repairing except indicates causes rising of high voltage, and it emits an X-ray from the cathode-ray tube.

7. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

(INSULATION CHECK PROCEDURE)

1. Unplug the plug from the AC outlet.
2. Remove the antenna terminal on TV and turn on the TV.
3. Insulation resistance between the cord plug terminals and the eternal exposure metal **[Note 2]** should be more than 1M ohm by using the 500V insulation resistance meter **[Note 1]**.
4. If the insulation resistance is less than 1M ohm, the inspection repair should be required.

[Note 1]

If you have not the 500V insulation resistance meter, use a Tester.

[Note 2]

External exposure metal: Antenna terminal
Earphone jack

HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the VERSION LETTER.)

1. MODEL NUMBER and VERSION LETTER
   The MODEL NUMBER can be found on the back of each product and the VERSION LETTER can be found at the end of the SERIAL NUMBER.
2. PART NO. and DESCRIPTION
   You can find it in your SERVICE MANUAL.

GENERAL SPECIFICATIONS

G-1.Outline of the Product

20 inch(508.0 mmV):Measured diagonally
Color CRT 90 degree deflection
2 -Speed 1/2" Video Cassette Recorder

☒VHS ☒Recorder/Player
☐VHS-C ☐Player

G-2.VCR Format

VHS Standard ☒NTSC ☐PAL ☐SECAM ☐PAL-M ☐PAL-N
☒VHS Hi-Fi Audio System

G-3.Video Recording System :Rotary,slant azimuth two head helical scan system
Luminance Component :FM recording
Chrominance Component :Low frequency converted direct recording

G-4.Broadcasting System US System M

G-5.Color System ☒NTSC ☐PAL ☐SECAM or Monochrome signal

G-6.NTSC Playback(PAL 60Hz) ☐Yes ☐No ☒Not Applicable

G-7.MESECAM ☐Yes ☐No ☒Not Applicable

G-8.Cassette Tape

☒VHS type video cassette tape Width 12.65mm (1/2 Inch)
☐VHS-C type video cassette tape Width 12.65mm (1/2 Inch)

G-9.Tape Speed

NTSC or PAL-M		PAL or SECAM	
☒SP	33.35 mm/sec	☐SP	23.39 mm/sec
☐LP	16.67 mm/sec	☐LP	11.69 mm/sec
☒SLP(EP)	11.12 mm/sec		

G-10.Recording/Playback Time

NTSC or PAL-M
☒at SP Mode Max. 210 min. (with T-210 cassette)
☐at LP Mode Max. 420 min. (with T-210 cassette)
☒at SLP(EP) Mode Max. 630 min. (with T-210 cassette)
PAL or SECAM
☐at SP Mode Max. 300 min. (with E-300 cassette)
☐at LP Mode Max. 600 min. (with E-300 cassette)

G-11.Deck

☐OVD-5 ☐OVD-6 ☒OVD-6S

G-12.Rewind/Fast Forward Time(Approx.)

FF:1'48" / Rew:1'48" ☒(with T-120 cassette) ☐(with E-180 cassette)

G-13.Search Speed

☒SP 3 and 5 Times
☐LP Times
☒SLP(EP) 9 and 15 Times

G-14.Slow Speed

☒SP 1/10 Times
☐LP Times
☒SLP(EP) 1/10 Times

G-15.Frame Advance

☐LP Times
☒SLP(EP) 1/10 Times

GENERAL SPECIFICATIONS

G-16.Antenna Input Impedance
VHF/UHF 75 ohm unbalanced

G-17.Tuner and Receiving channel ☒1Tuner System ☐2Tuner System ☐BS Tuner
Tuner : Contactless Electric tuner

☐Oscar(W/O HYPER) ☐Oscar(W/ HYPER) ☐France CATV) ☒Others
channel coverage
2 ~ 69 , 4A , A-5 ~ A-1 , A ~ I , J ~ W , W+1 ~ W+84
Tuning System
☒Frequency syn. ☐Voltage syn. ☐Others

G-18.Preset Channel: -- channels

G-19.Intermediate Frequency

Picture(FP)	45.75 MHz	_____ MHz	_____ MHz
Sound (FS)	41.25 MHz	_____ MHz	_____ MHz
FP-FS	4.50 MHz	_____ MHz	_____ MHz

G-20. Stereo/Dual TV Sound
☒Yes(☐NICAM ☐GERMAN ☒USA ☐JAPAN ☐JAPAN BS) ☐No

G-21.Video Signal
Input Level 1 Vp-p / 75 ohm
Output Level 1 Vp-p / 75 ohm
S/N Ratio 50 dB (Weighted)
Horizontal Resolution at SP Mode 220 Lines

G-22.Audio Signal
Input Level
Line - dB / - Kohm
RCA - 8 dB / 50 Kohm
Output Level
Line - dB / - Kohm
RCA - 8 dB / 1 Kohm
(0dB=0.775 V rms)
S/N Ratio at SP Mode 38 dB
Harmonic Distortion : 1.5 % (1KHz)
Frequency Response : at SP Mode 100 Hz ~ 10 KHz
at LP Mode _____ Hz ~ _____ KHz
at SLP(EP) Mode 100 Hz ~ 4 KHz

Hi-Fi Model's Spes ☐NONE
Depth Multiplex Recording Rotary, Slant Azimuth Two Head System Helical Scan System
Frequency Response : 20 Hz ~ 20 KHz(+-6dB)
Dynamic Range : More than 90 dB
Wow And Flutter : Less than 0.01 % Wrms
Channel Separation : More than 60 dB
Harmonic Distortion : Less than 1 %

G-23.Heads
Video ☒4 Rotary Heads Track Width
(SP : 1ch 49 μm, 2ch 58 μm, SLP : 1ch 21 μm, 2ch 21 μm)
FM Audio ☒2 Rotary Heads Track Width(SP/SLP : 1ch 27 μm, 2ch 27 μm)
Audio / Control ☒1 Stationary Head (☒Mono ☐Stereo(L,R))
Erase ☒1 Full Track Erase

G-24.Motor: 3 Motors
☒Tape/Cassette Loading
☒Capstan (Direct Drive)

G-25.Power Source
120 V ☐AC 50Hz ☒AC 60Hz
☐EXT DC Jack - V

GENERAL SPECIFICATIONS

G-26.Power Consumption: 115 W at AC 120 V 60 Hz(Approx.)
- W at DC - V
(at TV and VCR ON)
Stand by: 5 W at AC 120 V 60 Hz(Approx.)
Per Year: --- kWh / Year

G-27.Dimensions(Approx.) 502 mm(W) 481.5 mm(D) 513 mm(H)

G-28.Weight(Approx.) Net : 26.5 Kg (58.5 lbs)
Gross: 28.5 Kg (62.9 lbs)

G-29.Cabinet Material

Cabinet Front:	☒PS	☐94HB	☒DECABROM
	☐ABS	☐94V2	☐NON-DECA
		☒94V0	
Cabinet Rear:	☒PS	☐94HB	☒DECABROM
	☐ABS	☐94V2	☐NON-DECA
		☒94V0	
Jack Panel:	☒PS	☐94HB	☒DECABROM
	☐ABS	☐94V2	☐NON-DECA
		☒94V0	

G-30.Cassette Loading System: ☒Front Cassette Loading System ☐Top Loading System

G-31.Tape Counter: Linear Time Tape Counter

G-32.Protector: ☒Power Fuse ☐Dew Sensor

G-33.Regulation

Safety

☒UL	☐CSA	☐SAA	☐SI	☐CE	☐SEV
☐BS	☐NF	☐NEMKO	☐FEMKO	☐DEMKO	☐IEC65
☐SEMKO	☐NZ	☐HOMOLO	☐SABS	☐CNS	☐SISIR
☐NOM	☐AS3159	☐DENTORI	☐UNE	☐GOST	☐NONE

Radiation

☒FCC	☐DOC	☐FTZ	☐PTT	☐CE	☐SEV
☐SABA	☐SI	☐NF	☐NZ	☐HOMOLO	☐UNE
☐CNS	☐CISPR13	☐DENTORI	☐AS/NZS	☐NONE	

X-Radiation

☒DHHS	☐HWC	☐PTB	☐DENTORI	☐NONE

G-34.Temperature

Operation	5 ºC	~	40 ºC
Storage	-20 ºC	~	60 ºC

G-35.Operating Humidity Less than 80 %RH

G-36.Clockand Timer

Calender : 1990/1/1 ~ 2081/12/31 (Initial ☒2000/1/1 ☐2005/1/1)
Built-in 1 Month 8 Events Programmable Timer
One Touch Recording : Max Time 5 Hours

Sleep Timer	☒Yes Max 120 Min.(10 Min. Step)	☐No
On/Off Timer	☒Yes 1 Programs	☐No
Wake Up Timer	☐Yes Programs	☒No
Auto Shut Off	15 Minutes	

GENERAL SPECIFICATIONS

G-37.Timer back up Time

More than 1/12 Minutes (at Power Off Mode)

G-38.Terminals

☒VHF/UHF Antenna Input ☐Din Type ☒ F-Type ☐ France Type

☒Front Video Input<AV2, RCA ø8.3>
☒Front Audio Input<AV2, RCA ø8.3> x2

☒Rear Video Input<AV1, RCA ø8.3>
☒Rear Audio Input<AV1, RCA ø8.3> x2

☒Rear Video Output<RCA ø8.3>
☒Rear Audio Output<RCA ø8.3> x2

☐Ear Phone Jack(ø3.5) ☒Head Phone Jack(Stereo & Mono, ø3.5)
☐DC Jack 12V(Center +) ☐AC Inlet ☐Ext Speaker
☐Diversity ☐Ear Phone ☐21 Pin (x___)

G-39.Indicator

Indicator	☒Power (Red)	☒Rec/OTR (Red)	☒T-Rec (Red)	☐On Timer (____)	☐CS (___)	☐NONE

G-40.On Screen Display

☒Menu ☒Timer Rec Set
☒Ch Set Up ☒TV/CATV ☒Auto Ch Memory
☒Add/Delete ☐Guide Ch Set
☒TV Set Up ☒V-Chip Set ☒On/Off Timer
☒Picture ☒Audio
☒Sap On/Off
☒Auto Repeat On/Off
☒System Set Up ☒Clock Set(☒Calendar ☒12H ☐24H)
☒Language ☒Auto Clock On/Off
☒Standard Time ☒Daylight Saving Time
☐G-CODE(or SHOWVIEW or PLUSCODE)No. Entry
☒Clock/Date ☒CH/AV ☒V-chip/Password
☒Tape Counter ☒Tape Speed ☒Caption/Text 1/2
☒Sleep Time ☒Tape In
☒Control Level (Vol,Bright,Cont,Color,Tint,Sharpness,Bass,Teble,Balance)
☐Control Level (Vol,Bright,Cont,Color,Sharpness)
☒Play/Stop/FF/Rew/Rec/OTR/T-Rec/Pause/Eject(Symble Mark)
☒Auto Tracking/Manual Tracking
☐Index ☒Repeat
☒Muting ☒Stereo/SAP/HiFi

G-41.OSD Language

☒Eng ☐Ger ☒Fre ☒Spa ☐Ita ☐Por ☐Jan

OSD Language Setting

☒Eng ☐Ger ☐Fre ☐Spa ☐Ita ☐Por ☐Jan ☐Not Applicable

GENERAL SPECIFICATIONS

G-42.Speaker

Position ☒Front ☐Side ☐Bottom
Size 3 inches
Imp. 8 ohm x 2 pcs
Output Max 1.5 + 1.5 W
10% 1.5 + 1.5 W (Typical)

G-43.EXT Speaker

☐Yes _____ W Imp _____ ohm ☒No

G-44.Carton

Master Carton: ☐Need ☒No Need
Content: ---- Set
Material: ---- / ---- Corrugated Carton
Dimensions: ---- mm(W) ---- mm(D) ---- mm(H)
Description of Origin ☐Yes ☐No

Gift Box

Material ☐Double/Brown Corrugated Carton (☐with Photo Label)
☒Double/White Corrugated Carton (☐with Photo Label)
☐Double Full Color Carton W/Photo
Dimensions: 586 mm(W) 569 mm(D) 590 mm(H)
Design: As Per BUYER 's
Description of Origin: ☒Yes ☐No

Drop Test Natural Dropping At 1 Corner / 3 Edges / 6 Surfaces
Height ☐25cm ☒31cm ☐46cm ☐62cm ☐80cm

Container Stuffing: 320 Sets / 40' container

G-45.Accessories

☐Channel Film ☐Dew/AHC Caution Sheet
☒Owner's Manual (☒W/Guarantee Card) [English]
☒Remote Control Unit ☐AC Plug Adaptor
☐Rod Antenna (☐One Pole ☐Two Pole/☐F-Type ☐DIN Type ☐France Type)
☐Loop Antenna(☐F-Type ☐DIN Type ☐France Type)
☐U/V Mixer ☐Quick Set-up Sheet
☐DC Car Cord (Center+) ☒Battery (UM- 4 x 2)
☐Guarantee Card ☐AC Cord
☐Warning Sheet ☐AV Cord (2Pin-1Pin)
☐Circuit Diagram ☒Registration Card
☐Antenna Change Plug ☐PTB Sheet
☐Service Facility List ☒300 ohm to 75 ohm Antenna Adaptor
☐Important Safeguard ☐Euro Warranty Information Sheet
☒ESP Card

G-46.Other Features

☒Auto Head Cleaning
☒Auto Tracking
☒Auto Clock
☐VIDEO PLUS+(SHOWVIEW,G-CODE) ☐Choke Coil
☒HQ (VHS Standard High Quality)
☒Auto Power On, Auto Play, Auto Rewind, Auto Eject
☒Forward / Reverse Picture Search ☐SQPB
☐One Touch Playback ☒CATV
☒Auto CH Memory ☒CM Skip(30sec x 6Times)
☒Closed Caption ☐Comb Filter
☒TV Auto Shutt off Function ☒Energy Star
☐End Call ☐TV Monitor
☒V-chip(☒USA ☐CANADA) ☒SAP
☒Energy Star

GENERAL SPECIFICATIONS

G-47.Switch

Front	☒Power	☒Channel Up	☒Volume Up
	☒Play	☒Channel Down	☒Volume Down
	☐Pause/Still	☒F.FWD/Cue	☒Rew/Rev
	☐System Select	☒Eject/Stop	☒Rec/OTR
	☐One Touch Playback	☐Main Power SW	☐Input Select
Rear	☐Color On/Off (SECAM only)	☐Degauss	
	☐Main Power SW		☐AC/DC

G-48.Magnetic Field

☒BV : +0.45G	☐BV : +0.35G	☐BV : +0.25G
BH : 0.18G	BH : 0.30G	BH : 0.30G
☐BV : -0.15G	☐BV : -0.25G	☐BV : -0.50G
BH : 0.15G	BH : 0.15G	BH : 0.30G

G-49.Remote Control Unit:

Unit: RC-DQ
Format : NEC
Custom Code : 40-BF/44-BB h
Glow in Dark Remocon ☐Yes ☒No
Power Source: D.C 3 V Battery UM - 4 x 2
Total 44 Keys

☒ 0	☒Power	☒Tracking Auto
☒ 1	☒Rec/OTR(2Key)	☒Tracking Up/Set +
☒ 2	☒Play	☒Tracking Down/Set -
☒ 3	☒F.Fwd	☒Menu
☒ 4	☒Rew	☒Enter
☒ 5	☒Pause/Still	☒Cancel
☒ 6	☒Stop	☒Muting
☒ 7	☒Eject	☒Volume Up
☒ 8	☒Timer Rec(2Key)	☒Volume Down
☒ 9	☒TV/Caption/Text	☒Ch Up
☒Sleep Timer		☒Ch Down
☒Quick View	☒Zero Return	☒Input Select
	☒Counter Reset	☒Speed
☒Call	☒CM Skip(Skip Search)	☒Audio Select(for Hi-Fi)
☒Slow(for 4Head)	☒Program(☐/VCR PLUS+)	☐ VCR PLUS+

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: BACK CABINET (Refer to Fig. 1-1)

1. Remove the 6 screws ①.
2. Remove the 2 screws ② which are used for holding the Back Cabinet.
3. Remove the AC cord from the AC cord hook ③.
4. Remove the Back Cabinet in the direction of arrow.

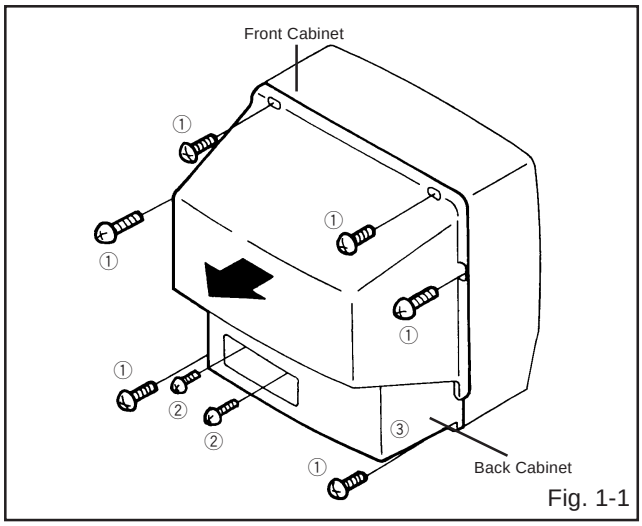


Fig. 1-1

1-2: CRT PCB (Refer to Fig. 1-2)

CAUTION: BEFORE REMOVING THE ANODE CAP, DISCHARGE ELECTRICITY BECAUSE IT CONTAINS HIGH VOLTAGE. BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE POWER CORD FROM THE AC SOURCE.

1. Remove the Anode Cap. (Refer to REMOVAL OF ANODE CAP)
2. Disconnect the following connectors: (CP801, CP802 and CP805).
3. Remove the CRT PCB in the direction of arrow.

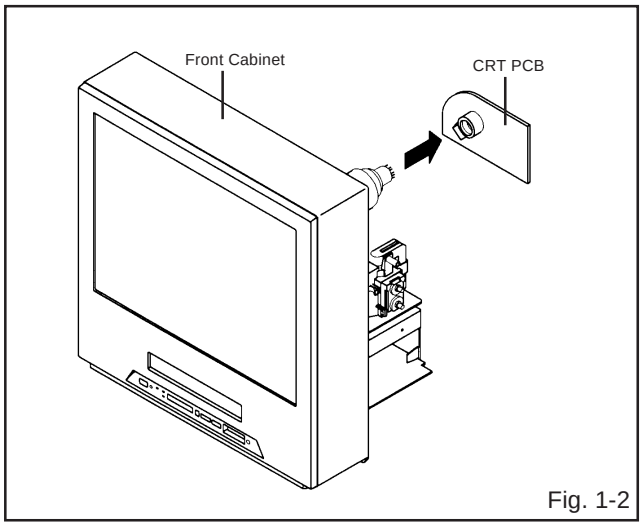


Fig. 1-2

1-3: TV/VCR BLOCK (Refer to Fig. 1-3)

1. Remove the 2 screws ①.
2. Disconnect the following connectors: (CP401, CP502, CP4201 and CP4202).
3. Unlock the support ②.
4. Remove the TV/VCR Block in the direction of arrow.

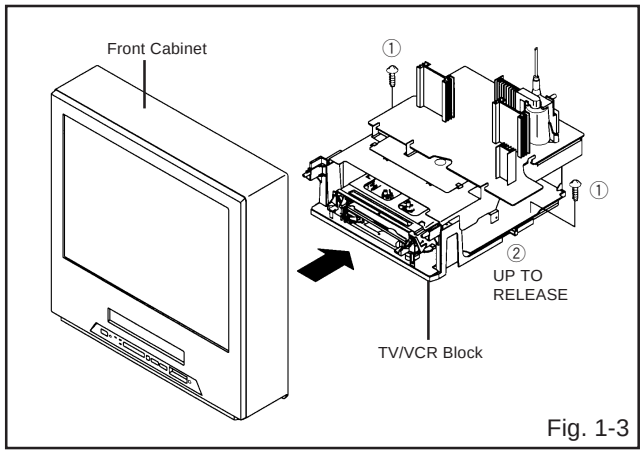


Fig. 1-3

1-4: MAIN PCB (Refer to Fig. 1-4)

1. Remove the screw ①.
2. Remove the Main PCB Holder.
3. Remove the 2 screws ②.
4. Remove the 3 screws ③.
5. Disconnect the following connectors: (CP810 and CP820).
6. Remove the Main PCB in the direction of arrow.

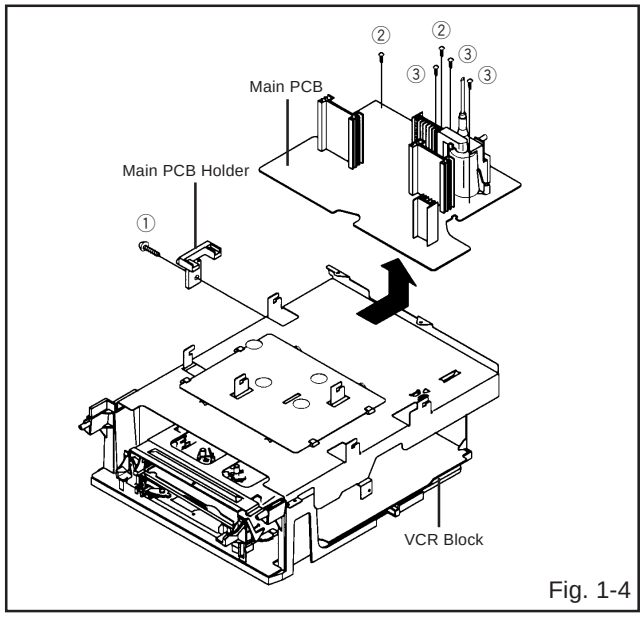


Fig. 1-4

DISASSEMBLY INSTRUCTIONS

1-5: DECK SHIELD PLATE (Refer to Fig. 1-5)

1. Remove the 2 screws ①.
2. Remove the screw ②.
3. Remove the Deck Shield Plate in the direction of arrow.

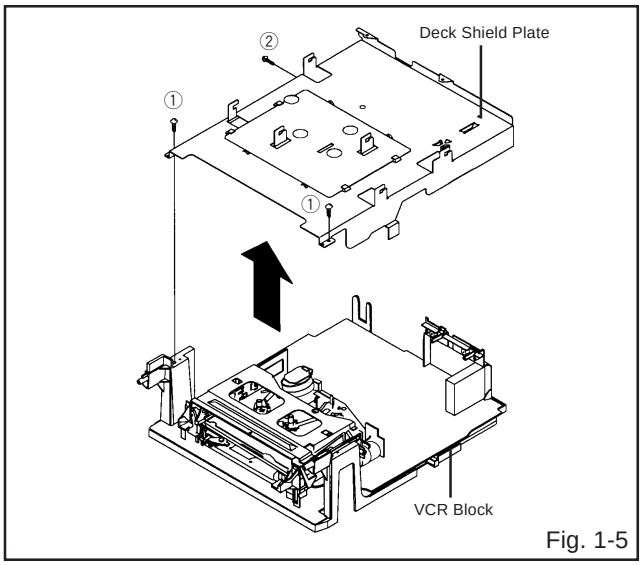


Fig. 1-5

1-6: DECK CHASSIS (Refer to Fig. 1-6)

1. Remove the 3 screws ①.
2. Disconnect the following connectors:
   (CP1004, CP1005, CP1006, CP4001, CP4002 and CP4003).
3. Remove the Deck Chassis in the direction of arrow.

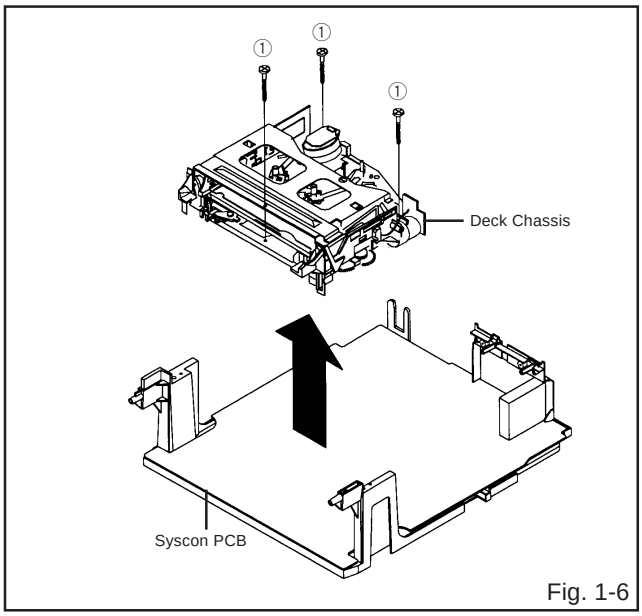


Fig. 1-6

1-7: JACK PLATE AND SYSCON PCB (Refer to Fig. 1-7)

1. Remove the screw ①.
2. Remove the Syscon PCB in the direction of arrow (A).
3. Remove the 2 screws ②.
4. Remove the nut ③.
5. Remove the washer ④.
6. Unlock the 2 supports ⑤.
7. Remove the Jack Plate in the direction of arrow (B).

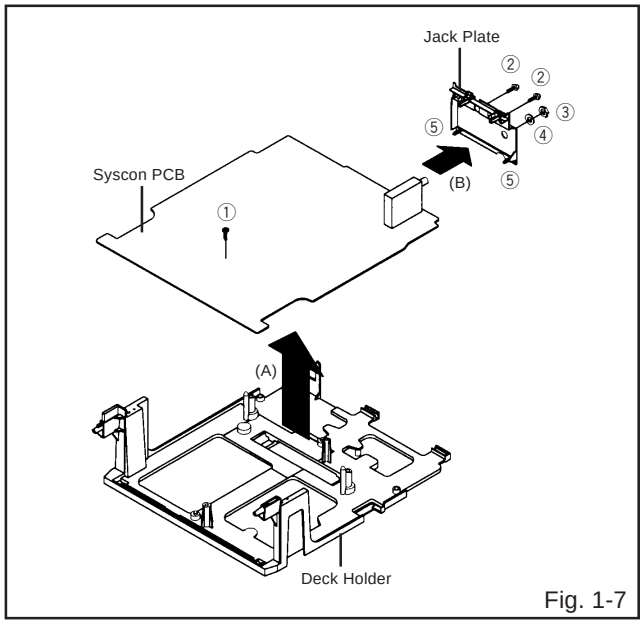


Fig. 1-7

DISASSEMBLY INSTRUCTIONS

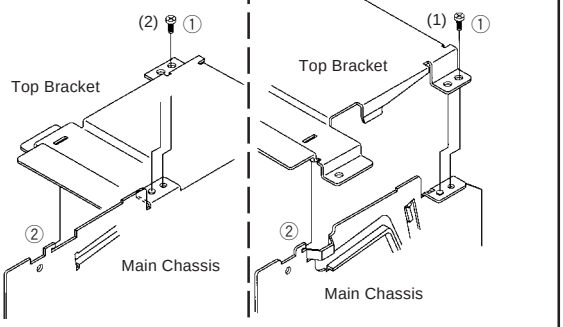
2. REMOVAL OF DECK PARTS

2-1: TOP BRACKET (Refer to Fig. 2-1)

1. Remove the 2 screws ①.
2. Slide the 2 supports ② and remove the Top Bracket.

NOTE

When you install the Top Bracket, install the screw (1) first, then install the screw (2).



• Screw Torque: 5 ± 0.5kgf•cm

Fig. 2-1

2-2: FLAP LEVER/TAPE GUIDE R (Refer to Fig. 2-2)

1. Move the Cassette Holder Ass'y to the back side.
2. Remove the Polyslider Washer ①.
3. Remove the Flap Lever.
4. Unlock the 3 supports ② and remove the Tape Guide R.

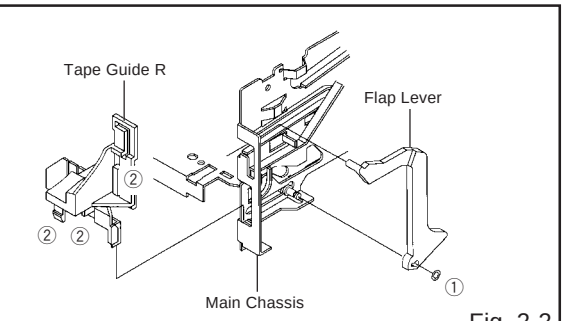
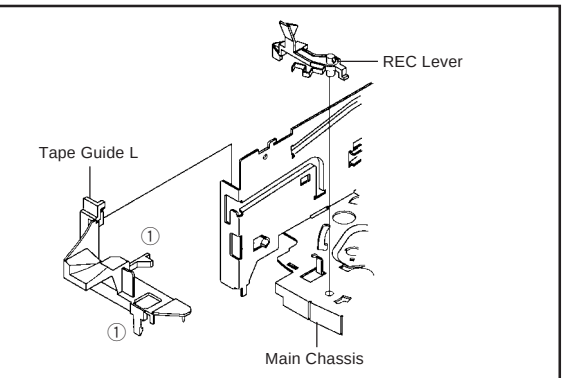


Fig. 2-2

2-3: TAPE GUIDE L (Refer to Fig. 2-3-A)

1. Move the Cassette Holder Ass'y to the back side.
2. Unlock the 2 supports ① and remove the Tape Guide L.
3. Remove the REC Lever. (Recorder only)

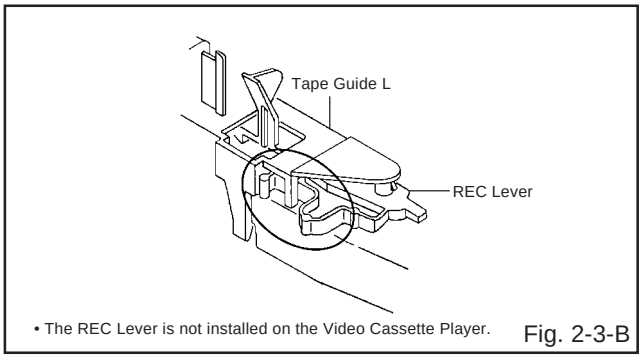


• The REC Lever is not installed on the Video Cassette Player.

Fig. 2-3-A

NOTE

When you install the Tape Guide L, install as shown in the circle of Fig. 2-3-B. **(Refer to Fig. 2-3-B)**



• The REC Lever is not installed on the Video Cassette Player.

Fig. 2-3-B

2-4: CASSETTE HOLDER ASS'Y (Refer to Fig. 2-4)

1. Move the Cassette Holder Ass'y to the front side.
2. Push the Locker R to remove the Cassette Side R.
3. Remove the Cassette Side L.

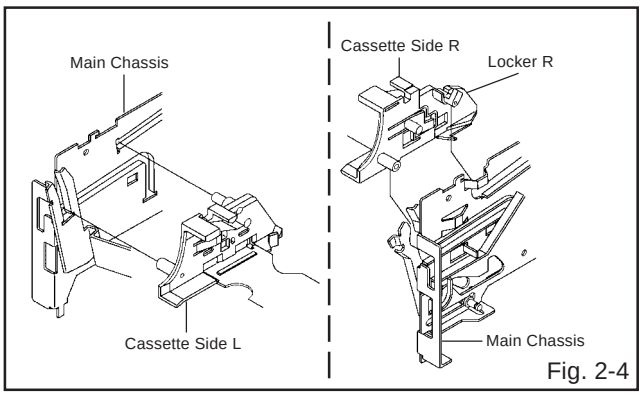


Fig. 2-4

2-5: CASSETTE SIDE L/R (Refer to Fig. 2-5)

1. Unlock the 4 supports ① and then remove the Cassette Side L/R.

NOTE

When you install the Cassette Side R, be sure to move the Locker R after installing.

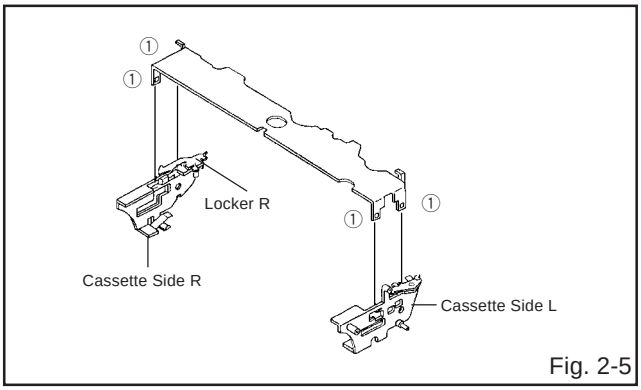


Fig. 2-5

DISASSEMBLY INSTRUCTIONS

2-6: LINK ASS'Y (Refer to Fig. 2-6)

1. Set the Link Ass'y to the Eject position.
2. Remove the (A) side of the Link Ass'y first, then remove the (B) side.

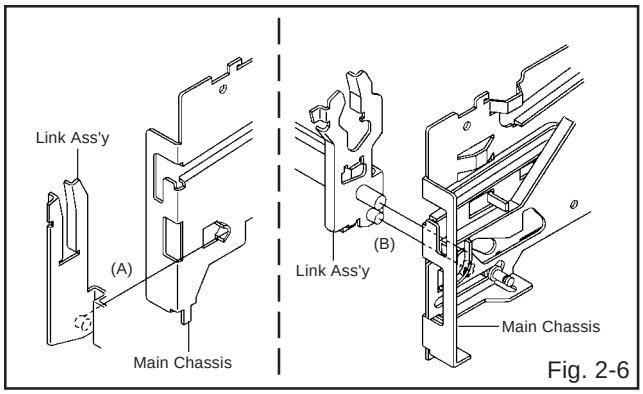
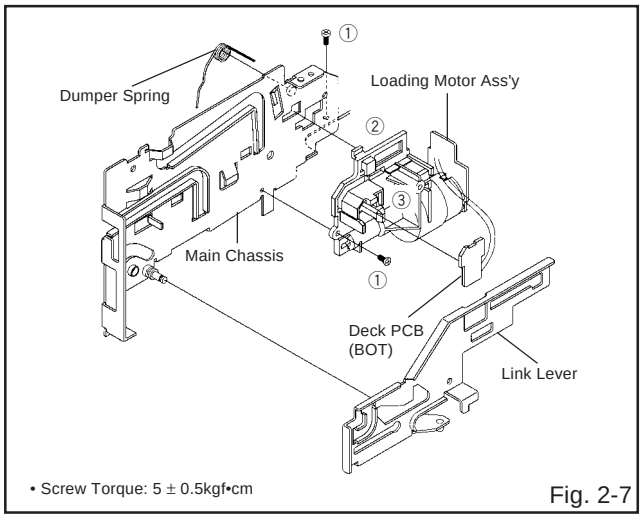


Fig. 2-6

2-7: LOADING MOTOR ASS'Y (Refer to Fig. 2-7)

1. Remove the Link Lever.
2. Remove the Dumper Spring.
3. Remove the 2 screws ①.
4. Unlock the support ② and remove the Loading Motor Ass'y.
5. Unlock the 2 supports ③ and remove the Deck PCB (BOT).



• Screw Torque: 5 ± 0.5kgf•cm

Fig. 2-7

2-8: SENSOR COVER L3 (Refer to Fig. 2-8)

1. Unlock the support ① and remove the Sensor Cover L3.

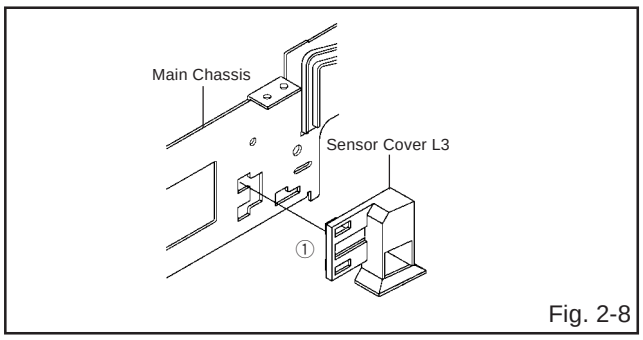


Fig. 2-8

2-9: TENSION ASS'Y (Refer to Fig. 2-9-A)

1. Move the Inclined S Ass'y to the back side.
2. Remove the Tension Spring.
3. Unlock the support ① and remove the Tension Arm Ass'y.
4. Remove the Tension Adjust.
5. Unlock the 2 supports ② and remove the Tension Band Ass'y.
6. Unlock the support ③ and remove the Tension Holder.
7. Remove the SS Brake Spring.
8. Remove the SS Arm Brake.

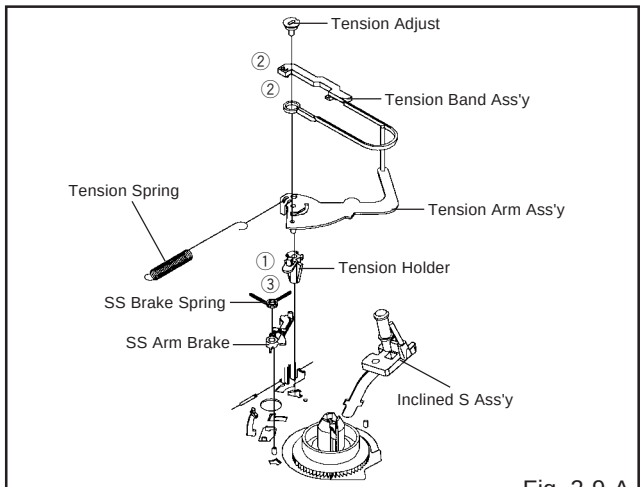


Fig. 2-9-A

NOTE

When you install the Tension Adjust, install as shown in Fig. 2-9-B. **(Refer to Fig. 2-9-B)**

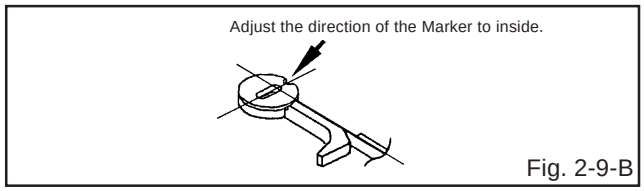


Fig. 2-9-B

2-10: T BRAKE ASS'Y (Refer to Fig. 2-10)

1. Remove the T Brake Spring.
2. Remove the T Brake Ass'y.

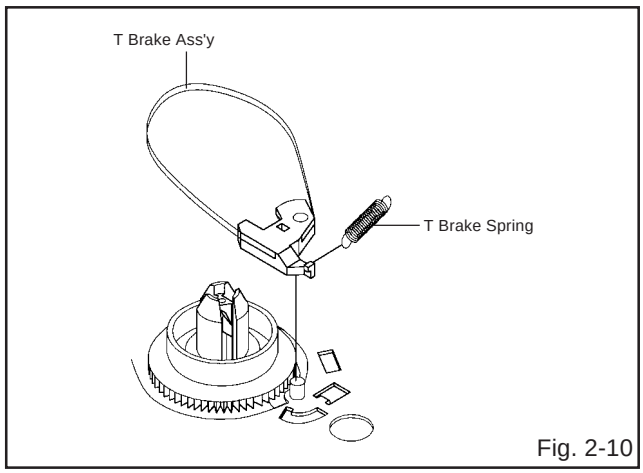


Fig. 2-10

DISASSEMBLY INSTRUCTIONS

2-11: S REEL/T REEL (Refer to Fig. 2-11)

1. Remove the S Reel and T Reel.
2. Remove the 2 Polyslider Washers ①.

NOTE

1. Take care not to damage the gears of the S Reel and T Reel.
2. The Polyslider Washer may be remained on the back of the reel.
3. Take care not to damage the shaft.
4. Do not touch the section "A" of S Reel and T Reel. (Use gloves.) **(Refer to Fig. 2-11)** Do not adhere the stains on it.
5. When you install the reel, clean the shaft and oil it. (If you do not oil, noise may be heard in FF/REW mode.)
6. After installing the reel, adjust the height of the reel. **(Refer to MECHANICAL ADJUSTMENT)**

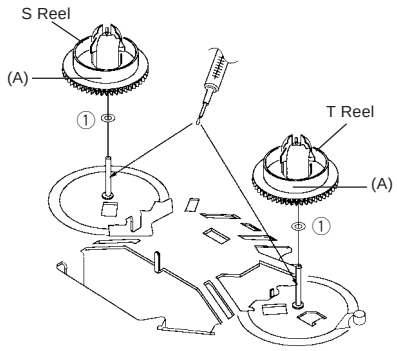
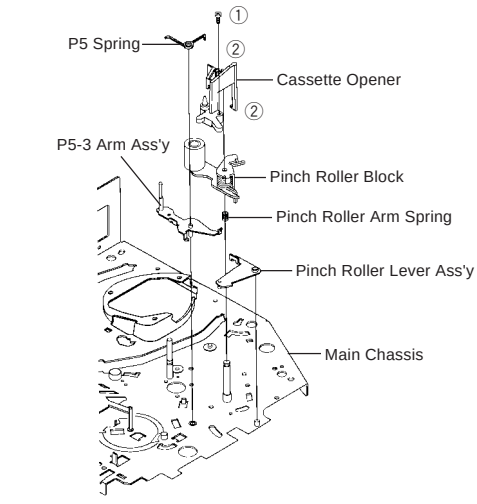


Fig. 2-11

2-12: PINCH ROLLER BLOCK/P5-3 ARM ASS'Y (Refer to Fig. 2-12-A)

1. Remove the P5 Spring.
2. Remove the screw ①.
3. Unlock the 2 supports ② and remove the Cassette Opener.
4. Remove the Pinch Roller Block, Pinch Roller Arm Spring, Pinch Roller Lever Ass'y and P5-3 Arm Ass'y.



• Screw Torque: 5 ± 0.5kgf•cm

Fig. 2-12-A

NOTE

1. Do not touch the Pinch Roller. (Use gloves.)
2. When you install the Pinch Roller Block, install as shown in the circle of Fig. 2-12-B. **(Refer to Fig. 2-12-B)**

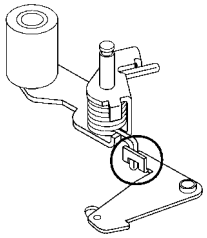


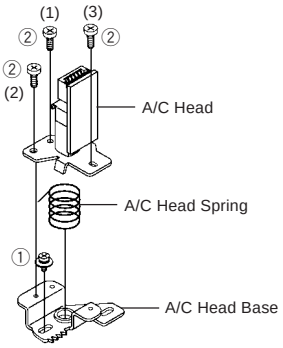
Fig. 2-12-B

2-13: A/C HEAD (Refer to Fig. 2-13-A)

1. Remove the screw ①.
2. Remove the A/C Head Base.
3. Remove the 3 screws ②.
4. Remove the A/C Head and A/C Head Spring.

NOTE

1. Do not touch the A/C Head. (Use gloves.)
2. When you install the A/C Head Spring, install as shown in Fig. 2-13-B. **(Refer to Fig. 2-13-B)**
3. When you install the A/C Head, tighten the screw (1) first, then tighten the screw (2), finally tighten the screw (3).



• Screw Torque: 4 ± 0.5kgf•cm (Screw ①)

Fig. 2-13-A

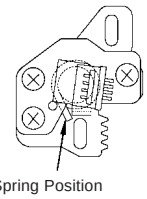
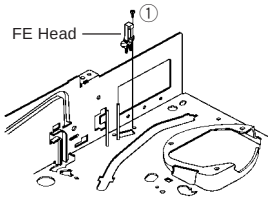


Fig. 2-13-B

2-14: FE HEAD (RECORDER ONLY) (Refer to Fig. 2-14)

1. Remove the screw ①.
2. Remove the FE Head.



• The FE Head is not installed on the Video Cassette Player.
• Screw Torque: 4 ± 0.5kgf•cm

Fig. 2-14

DISASSEMBLY INSTRUCTIONS

2-15: AHC ASS'Y/CYLINDER UNIT ASS'Y (Refer to Fig. 2-15)

1. Unlock the support ① and remove the AHC Ass'y.
2. Remove the 3 screws ②.
3. Remove the Cylinder Unit Ass'y.

NOTE

When you install the Cylinder Unit Ass'y, tighten the screws from (1) to (3) in order while pulling the Ass'y toward the left front direction.

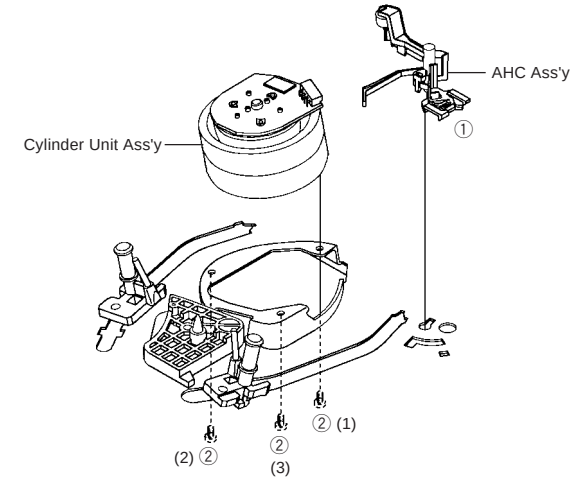


Fig. 2-15

2-16: CAPSTAN DD UNIT (Refer to Fig. 2-16)

1. Remove the Capstan Belt.
2. Remove the 3 screws ①.
3. Remove the Capstan DD Unit.

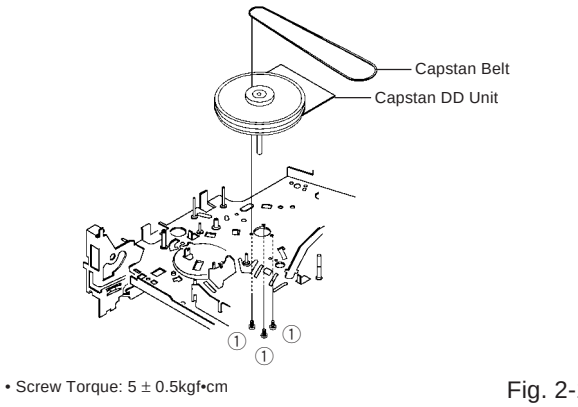


Fig. 2-16

2-17: MIDDLE GEAR/MAIN CAM (Refer to Fig. 2-17-A)

1. Remove the Polyslider Washer ①, then remove the Middle Gear.
2. Remove the E-Ring, then remove the Main Cam, P5 Cam and Pinch Roller Cam.
3. Remove the Polyslider Washer ②, then remove the Joint Gear.

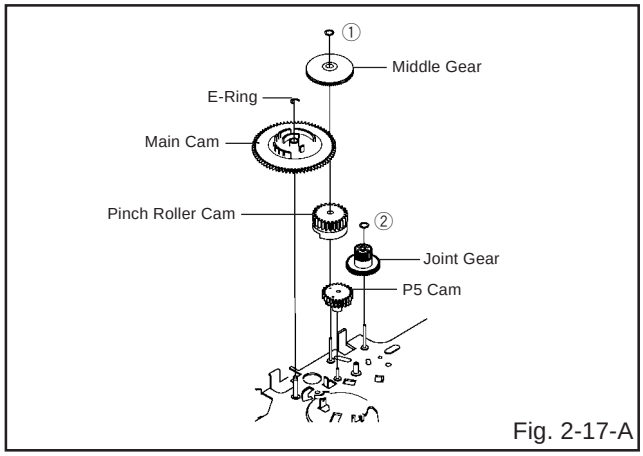


Fig. 2-17-A

NOTE

When you install the Pinch Roller Cam, P5 Cam and Main Cam, align each marker. **(Refer to Fig. 2-17-B)**

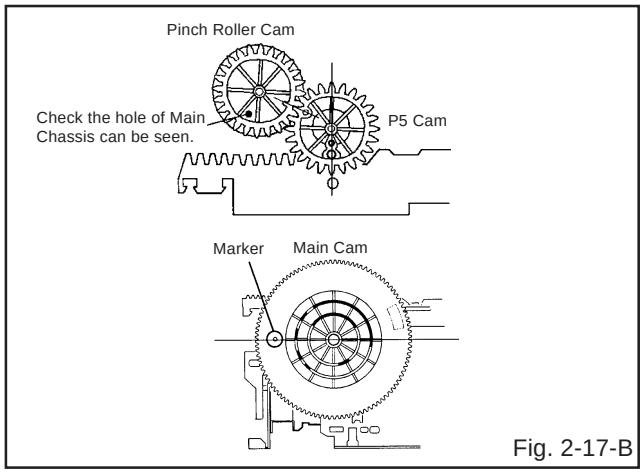


Fig. 2-17-B

2-18: CLUTCH ASS'Y (Refer to Fig. 2-18)

1. Remove the Polyslider Washer ①.
2. Remove the Clutch Ass'y, Ring Spring and Coupling Gear.
3. Unlock the 2 supports ② and remove the Clutch Lever.

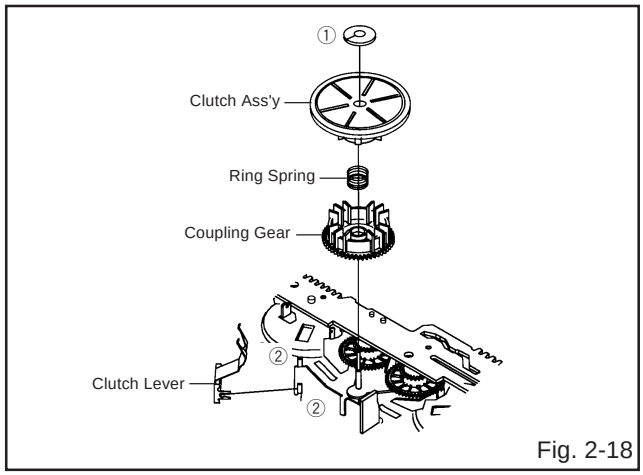
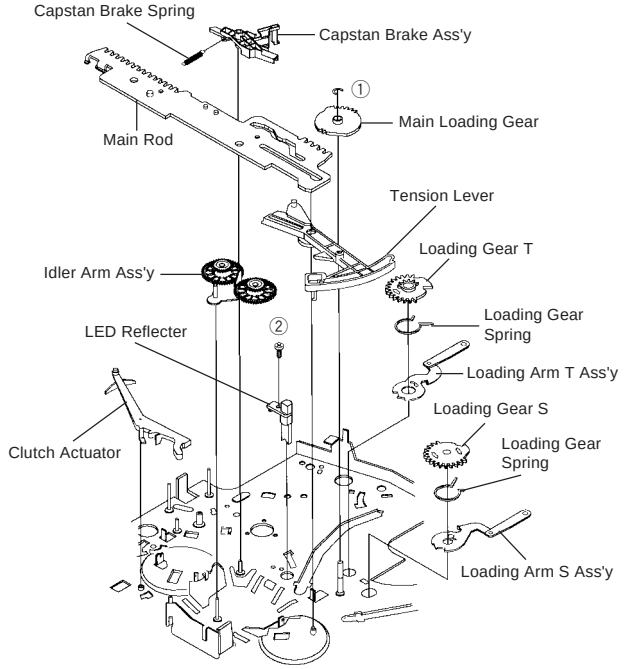


Fig. 2-18

DISASSEMBLY INSTRUCTIONS

2-19: LOADING GEAR S/T ASS'Y (Refer to Fig. 2-19-A)

1. Remove the E-Ring ① and remove the Main Loading Gear.
2. Remove the Capstan Brake Spring.
3. Slide the Main Rod and remove the Capstan Brake Ass'y.
4. Remove the Main Rod, Tension Lever, Clutch Actuator, Idler Arm Ass'y.
5. Remove the screw ②.
6. Remove the LED Reflecter.
7. Remove the Loading Arm S Ass'y and Loading Arm T Ass'y.
8. Remove the Loading Gear S and Loading Gear T.
9. Remove the Loading Gear Spring.



• Screw Torque: 5 ± 0.5kgf•cm

Fig. 2-19-A

NOTES

1. When you install the Loading Arm S Ass'y, Loading Arm T Ass'y and Main Loading Gear, align each marker. **(Refer to Fig. 2-19-B)**

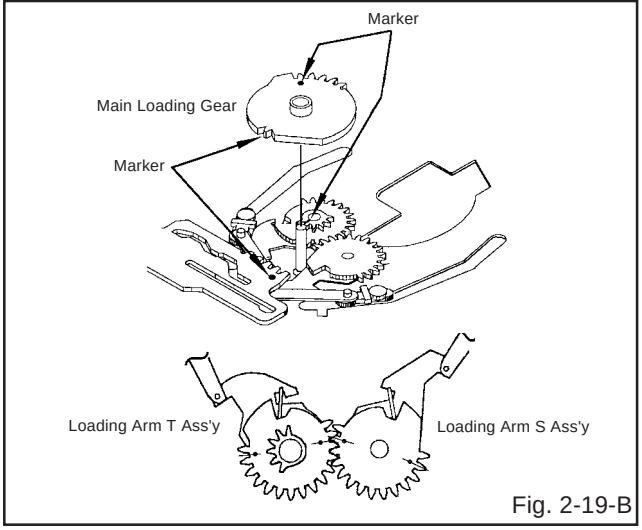


Fig. 2-19-B

2. When you install the Clutch Actuator, install as shown in the circle of Fig. 2-19-C. **(Refer to Fig. 2-19-C)**

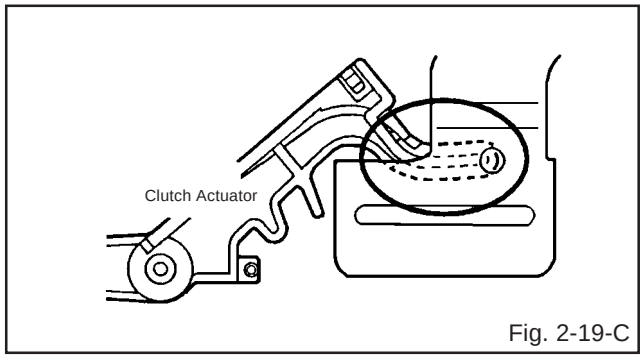


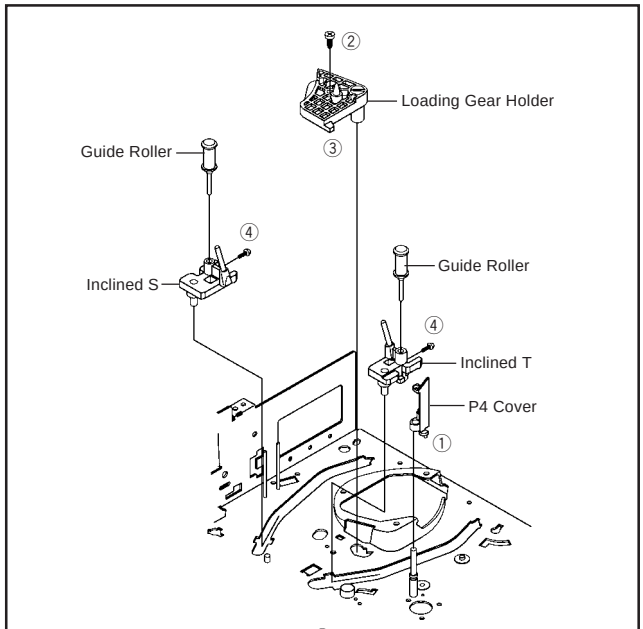
Fig. 2-19-C

2-20: INCLINED S/T ASS'Y (Refer to Fig. 2-20)

1. Unlock the support ① and remove the P4 Cover.
2. Remove the screw ②.
3. Unlock the support ③ and remove the Loading Gear Holder.
4. Remove the Inclined S.
5. Remove the Inclined T.
6. Remove the 2 screws ④, then remove the Guide Roller.

NOTE

Do not touch the roller of Guide Roller.



• Screw Torque: 5 ± 0.2kgf•cm (Screw ②)
• Screw Torque: 0.7 ± 0.2kgf•cm (Screw ④)

Fig. 2-20

DISASSEMBLY INSTRUCTIONS

3. REMOVAL OF ANODE CAP

Read the following **NOTED** items before starting work.

* After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
* Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

REMOVAL

1. Follow the steps as follows to discharge the Anode Cap. **(Refer to Fig. 3-1.)**
   Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground.
   While holding the plastic part of the insulated Screwdriver, touch the support of the Anode with the tip of the Screwdriver.
   A cracking noise will be heard as the voltage is discharged.

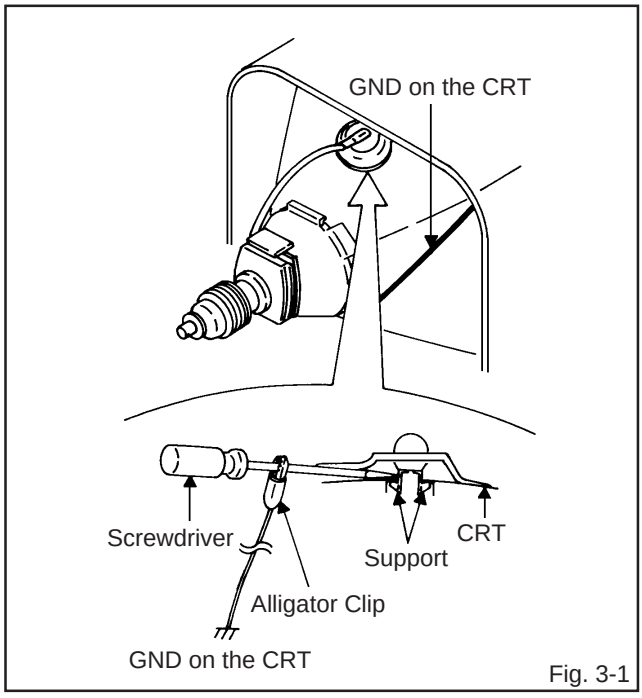


Fig. 3-1

2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support. **(Refer to Fig. 3-2.)**

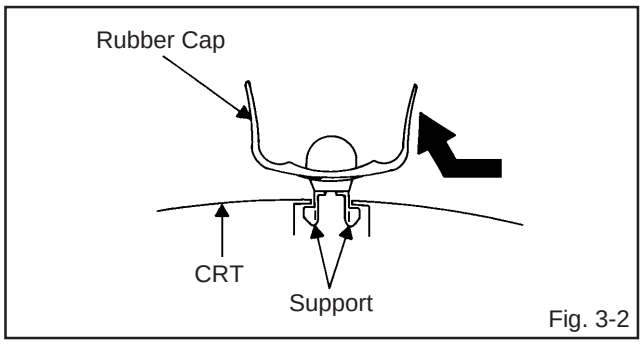


Fig. 3-2

3. After one side is removed, pull in the opposite direction to remove the other.

NOTE

Take care not to damage the Rubber Cap.

INSTALLATION

1. Clean the spot where the cap was located with a small amount of alcohol. **(Refer to Fig. 3-3.)**

NOTE

Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

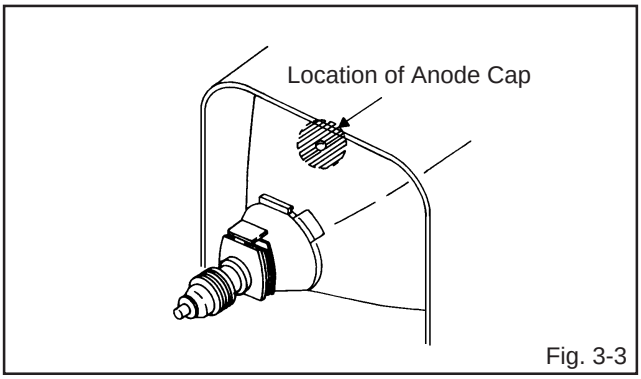


Fig. 3-3

2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. **(Refer to Fig. 3-4.)**

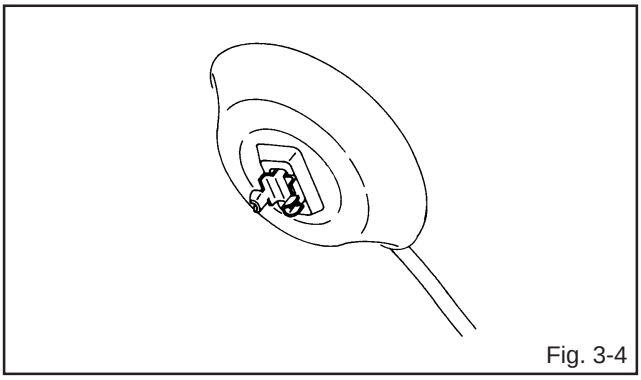


Fig. 3-4

4. Insert one end of the Anode Support into the anode button, then the other as shown in **Fig. 3-5**.

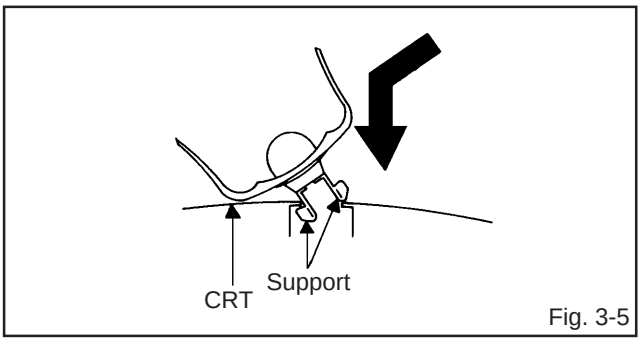


Fig. 3-5

5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

KEY TO ABBREVIATIONS

A	**A/C**	:	Audio/Control
	ACC	:	Automatic Color Control
	AE	:	Audio Erase
	AFC	:	Automatic Frequency Control
	AFT	:	Automatic Fine Tuning
	AFT DET	:	Automatic Fine Tuning Detect
	AGC	:	Automatic Gain Control
	AMP	:	Amplifier
	ANT	:	Antenna
	A.PB	:	Audio Playback
	APC	:	Automatic Phase Control
	ASS'Y	:	Assembly
	AT	:	All Time
	AUTO	:	Automatic
	A/V	:	Audio/Video
B	**BGP**	:	Burst Gate Pulse
	BOT	:	Beginning of Tape
	BPF	:	Bandpass Filter
	BRAKE SOL	:	Brake Solenoid
	BUFF	:	Buffer
	B/W	:	Black and White
C	**C**	:	Capacitance, Collector
	CASE	:	Cassette
	CAP	:	Capstan
	CARR	:	Carrier
	CH	:	Channel
	CLK	:	Clock
	CLOCK (SY-SE)	:	Clock (Syscon to Servo)
	COMB	:	Combination, Comb Filter
	CONV	:	Converter
	CPM	:	Capstan Motor
	CTL	:	Control
	CYL	:	Cylinder
	CYL-M	:	Cylinder-Motor
	CYL SENS	:	Cylinder-Sensor
D	**DATA (SY-CE)**	:	Data (Syscon to Servo)
	dB	:	Decibel
	DC	:	Direct Current
	DD Unit	:	Direct Drive Motor Unit
	DEMOD	:	Demodulator
	DET	:	Detector
	DEV	:	Deviation
E	**E**	:	Emitter
	EF	:	Emitter Follower
	EMPH	:	Emphasis
	ENC	:	Encoder
	ENV	:	Envelope
	EOT	:	End of Tape
	EQ	:	Equalizer
	EXT	:	External
F	**F**	:	Fuse
	FBC	:	Feed Back Clamp
	FE	:	Full Erase
	FF	:	Fast Forward, Flipflop
	FG	:	Frequency Generator
	FL SW	:	Front Loading Switch
	FM	:	Frequency Modulation
	FSC	:	Frequency Sub Carrier
	FWD	:	Forward
G	**GEN**	:	Generator
	GND	:	Ground
H	**H.P.F**	:	High Pass Filter
	H.SW	:	Head Switch
	Hz	:	Hertz
I	**IC**	:	Integrated Circuit
	IF	:	Intermediate Frequency
	IND	:	Indicator
	INV	:	Inverter
K	**KIL**	:	Killer
L	**L**	:	Left
	LED	:	Light Emitting Diode
	LIMIT AMP	:	Limiter Amplifier
	LM, LDM	:	Loading Motor
	LP	:	Long Play
	L.P.F	:	Low Pass Filter
	LUMI.	:	Luminance
M	**M**	:	Motor
	MAX	:	Maximum
	MINI	:	Minimum
	MIX	:	Mixer, mixing
	MM	:	Monostable Multivibrator
	MOD	:	Modulator, Modulation
	MPX	:	Multiplexer, Multiplex
	MS SW	:	Mecha State Switch
N	**NC**	:	Non Connection
	NR	:	Noise Reduction
O	**OSC**	:	Oscillator
	OPE	:	Operation
P	**PB**	:	Playback
	PB CTL	:	Playback Control
	PB-C	:	Playback-Chrominance
	PB-Y	:	Playback-Luminance
	PCB	:	Printed Circuit Board
	P. CON	:	Power Control
	PD	:	Phase Detector
	PG	:	Pulse Generator
	P-P	:	Peak-to Peak
R	**R**	:	Right
	REC	:	Recording
	REC-C	:	Recording-Chrominance
	REC-Y	:	Recording-Luminance
	REEL BRK	:	Reel Brake
	REEL S	:	Reel Sensor
	REF	:	Reference
	REG	:	Regulated, Regulator
	REW	:	Rewind
	REV, RVS	:	Reverse
	RF	:	Radio Frequency
	RMC	:	Remote Control
	RY	:	Relay
S	**S. CLK**	:	Serial Clock
	S. COM	:	Sensor Common
	S. DATA	:	Serial Data
	SEG	:	Segment
	SEL	:	Select, Selector
	SENS	:	Sensor
	SER	:	Search Mode
	SI	:	Serial Input
	SIF	:	Sound Intermediate Frequency
	SO	:	Serial Output
	SOL	:	Solenoid
	SP	:	Standard Play
	STB	:	Serial Strobe
	SW	:	Switch

KEY TO ABBREVIATIONS

S	**SYNC**	:	Synchronization
	SYNC SEP	:	Sync Separator, Separation
T	**TR**	:	Transistor
	TRAC	:	Tracking
	TRICK PB	:	Trick Playback
	TP	:	Test Point
U	**UNREG**	:	Unregulated
V	**V**	:	Volt
	VCO	:	Voltage Controlled Oscillator
	VIF	:	Video Intermediate Frequency
	VP	:	Vertical Pulse, Voltage Display
	V.PB	:	Video Playback
	VR	:	Variable Resistor
	V.REC	:	Video Recording
	VSF	:	Visual Search Fast Forward
	VSR	:	Visual Search Rewind
	VSS	:	Voltage Super Source
	V-SYNC	:	Vertical-Synchronization
	VT	:	Voltage Tuning
X	**X'TAL**	:	Crystal
Y	**Y/C**	:	Luminance/Chrominance

SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.

To enter SERVICE MODE, unplug AC cord till lost actual clock time. Then press and hold Vol (-) button of main unit and remocon key simultaneously.

The both pressing of set key and remote control key will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 5 seconds before Power On.

Set Key	Remocon Key	Operations
VOL. (-) MIN	0	Releasing of V-CHIP PASSWORD.
VOL. (-) MIN	1	Initialization of the factory. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	2	Horizontal position adjustment of OSD. NOTE: Also can be adjusted by using the Adjustment MENU. Refer to the "ELECTRICAL ADJUSTMENT" (OSD HORIZONTAL).
VOL. (-) MIN	3	Adjust the PG SHIFTER automatically. Refer to the "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
VOL. (-) MIN	4	Adjust the PG SHIFTER manually. Refer to the "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
VOL. (-) MIN	5	Adjusting of the Tracking to the center position. NOTE: Also can be adjusted by pressing the ATR button for more than 2 seconds during PLAY.
VOL. (-) MIN	6	POWER ON total hours and PLAY/REC total hours are displayed on the screen. Refer to the "PREVENTIVE CHECKS AND SERVICE INTERVALS" (CONFIRMATION OF USING HOURS). Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "NOTE FOR THE REPLACING OF MEMORY IC".
VOL. (-) MIN	8	Writing of EEPROM initial data. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	9	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).

Method	Operations
Press the ATR button on the remote control for more than 2 seconds during PLAY.	Adjusting of the Tracking to the center position. Refer to the "MECHANICAL ADJUSTMENT" (GUIDE ROLLER) and "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
Make the short circuit between the test point of SERVICE and the GND.	The EOT/BOT/Reel sensor do not work at this moment. Refer to the "PREPARATION FOR SERVICING"

PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage. Unless maintenance is properly carried out, the following service intervals may be quite shortened as harmful effects may be had on other parts. Also, long term storage or misuse may cause transformation and aging of rubber parts.

Time / Parts Name	500 hours	1,000 hours	1,500 hours	2,000 hours	3,000 hours	Notes
Audio Control Head	■	■	■	■	■	Clean those parts in contact with the tape.
Full Erase Head (Recorder only)	■	■	■	■	■	
Capstan Belt			■	■	●	Clean the rubber, and parts which the rubber touches.
Pinch Roller	■	■	■	■	■ ●	
Capstan DD Unit					●	
Loading Motor					●	
Tension Band					●	
Capstan Shaft	■	■	■	■	■	
Tape Running Guide Post	■	■	■	■	■	Replace when rolling becomes abnormal.
Cylinder Unit	■	■	■	■	●	Clean the Head

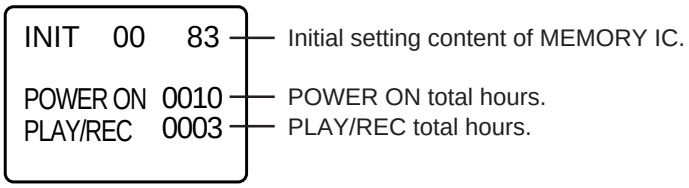
■ : Clean
● : Replace

CONFIRMATION OF USING HOURS

POWER ON total hours and PLAY/REC total hours can be checked on the screen.
Total hours are displayed in 16 system of notation.

NOTE: The confirmation of using hours will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 5 seconds before Power On.

1. Set the VOLUME to minimum.
2. While holding down VOLUME button on front cabinet, press key 6 on remote control simultaneously.
3. After the confirmation of using hours, turn off the power.



(16 x 16 x 16 x thousands digit value) + (16 x 16 x hundreds digit value) + (16 x tens digit value) + (ones digit value)

PREVENTIVE CHECKS AND SERVICE INTERVALS

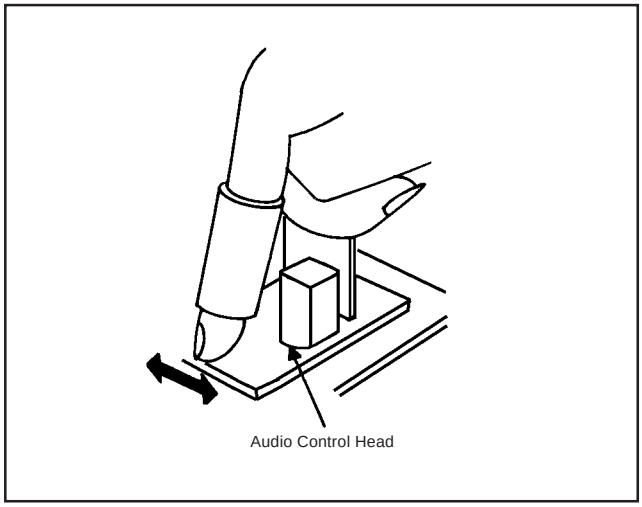
CLEANING

NOTE

After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

1. AUDIO CONTROL HEAD

Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol and clean the audio control head by wiping it horizontally. Clean the full erase head in the same manner. **(Refer to the figure below.)**



2. TAPE RUNNING SYSTEM

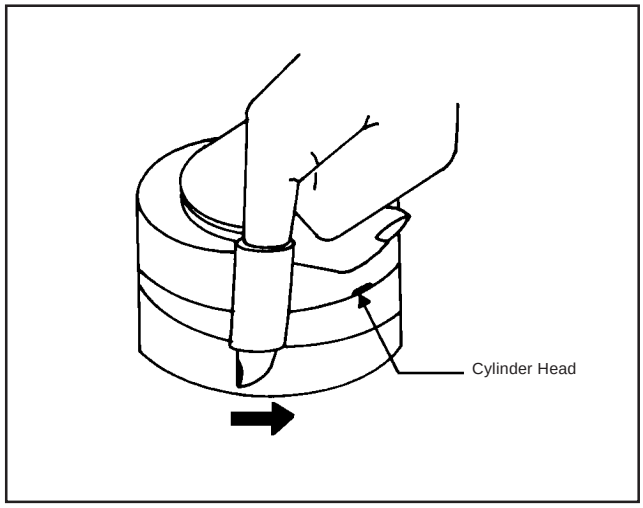
When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

3. CYLINDER

Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly. Turn the cylinder head counterclockwise to clean it (in the direction of the arrow). **(Refer to the figure below.)**

NOTE

Do not exert force against the cylinder head. Do not move the chamois upward or downward on the head.
Use the chamois one by one.



NOTE FOR THE REPLACING OF MEMORY IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

NOTE: Initial Data setting will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 5 seconds before Power On.

ADDRESS	DATA	ADDRESS	DATA	ADDRESS	DATA	ADDRESS	DATA	ADDRESS	DATA
00	08	0A	1C	14	27	1E	10	28	01
01	0A	0B	90	15	00	1F	E1	29	35
02	A2	0C	99	16	32	20	BA		
03	43	0D	0D	17	05	21	05		
04	C2	0E	00	18	9E	22	79		
05	14	0F	0A	19	89	23	05		
06	34	10	8C	1A	A9	24	3E		
07	4B	11	68	1B	02	25	2A		
08	51	12	5C	1C	05	26	39		
09	B2	13	53	1D	39	27	00		

Table 1

1. Enter DATA SET mode by setting VOLUME to minimum.
2. While holding down VOLUME button on front cabinet, press key 6 on remote control simultaneously. ADDRESS and DATA should appear as FIG 1.

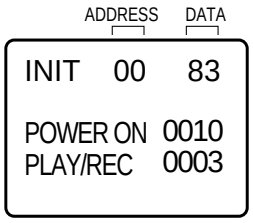
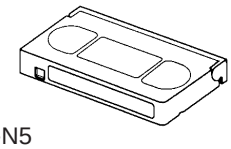
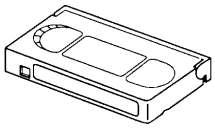
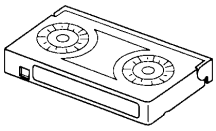
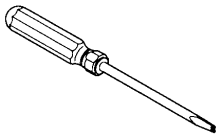
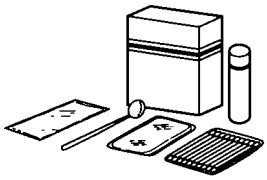
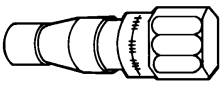
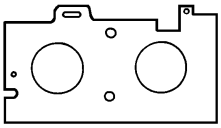
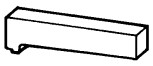
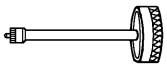
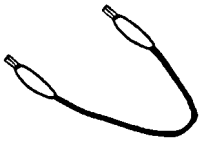
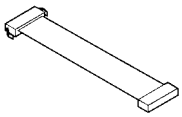
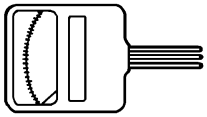


Fig. 1

3. ADDRESS is now selected and should "blink". Using the SET + or - keys on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press ENTER to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using SET + or - until required DATA value has been selected.
6. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

The unit will now have the correct DATA for the new MEMORY IC.

SERVICING FIXTURES AND TOOLS

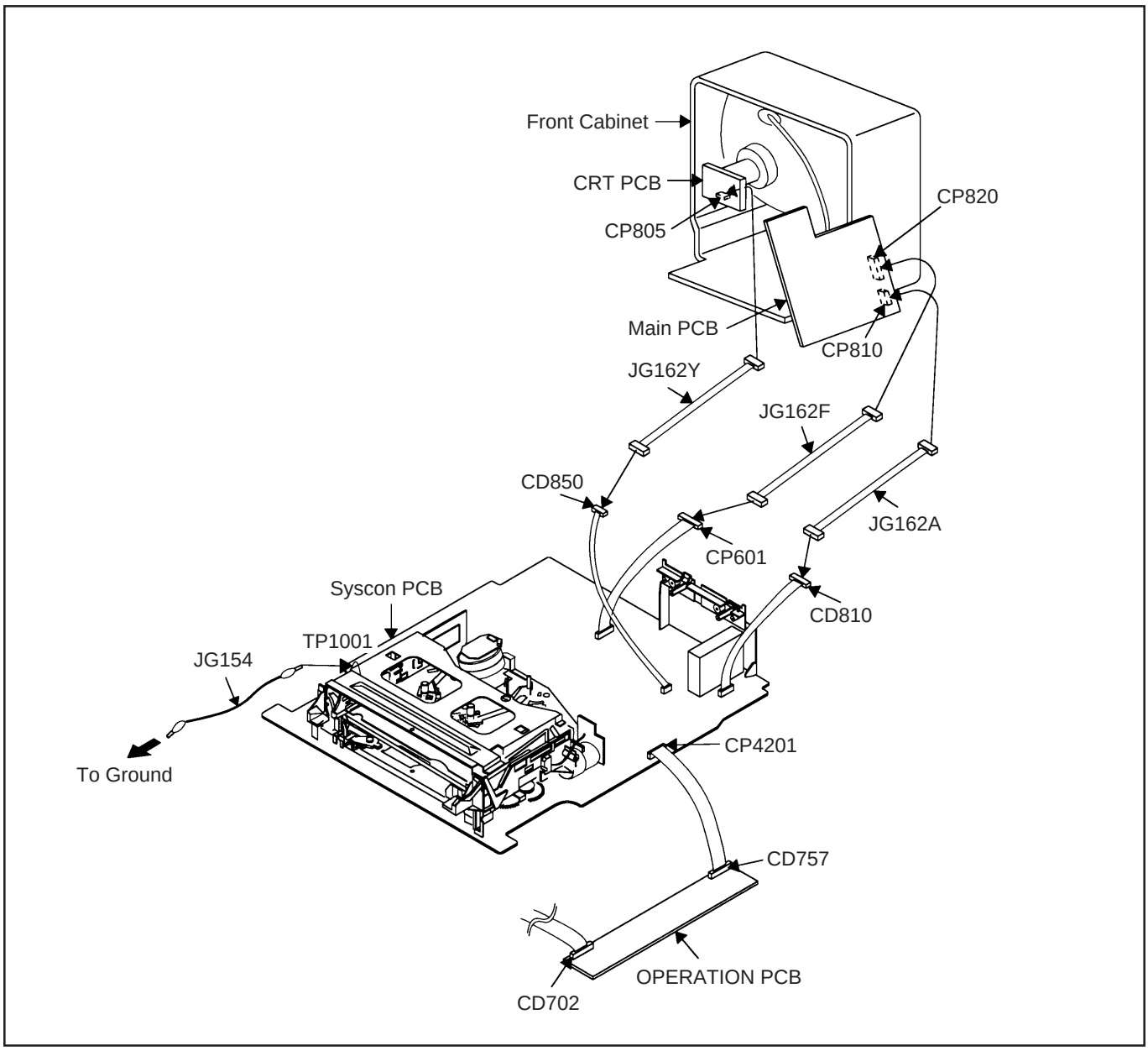
Alignment Tape  ST-N5 ST-NF	Back tension cassette gauge  70909103	Torque cassette gauge (KT-300NR)  70909199	Taper nut driver  70909228
VTR cleaning kit 	VTR lubrication kit 	Grease 	JG002B Adapter JG002E Dial Torque Gauge (10~90gf•cm) JG002F (60~600gf•cm) 
JG022 Master Plane 	JG024A Reel Disk Height Adjustment Jig 	JG153 X Value Adjustment Screwdriver 	JG154 Cable 
JG162A Cable (8 Pins) JG162F Cable (13 Pins) JG162Y Cable (5 Pins) 	Tentelometer 		

Part No.	Remarks
JG002B	VSR Torque, Brake Torque (S Reel/T Reel Ass'y)
JG002E	Brake Torque (T Reel Ass'y)
JG002F	VSR Torque, Brake Torque (S Reel)
JG153	X Value Adjustment
JG022/JG024A	Reel Disk Height Adjustment
JG154	Used to connect the test point of SERVICE and GROUND
JG162A/JG162F	Used to connect the Syscon PCB and Main PCB
JG162Y	Used to connect the Syscon PCB and CRT PCB

PREPARATION FOR SERVICING

How to use the Servicing Fixture

1. Unplug the connector CP4201 and CP4202, then remove the TV/VCR Block from the set.
2. Unplug the connector CP810, CP820 and CP805, then remove the Main PCB from the VCR Block.
3. Connect as shown in the below figure using the Service Fixture.
   - Connect the Syscon PCB to the Main PCB with the cable JG162A and JG162F.
   - Connect the Syscon PCB to the CRT PCB with the cable JG162Y.
4. Remove the Operation PCB from the set, then connect it with the Syscon PCB.
   If necessary, connect CD702 (Front A/V Jack Input Terminal)
5. Short circuit between **TP1001** and **Ground** with the cable JG154.
   (Refer to MAJOR COMPONENTS LOCATION GUIDE)
   The EOT, BOT and Reel Sensor do not work at this moment.
6. At that time, the STOP/EJECT button is available to insert and eject the Cassette Tape.



MECHANICAL ADJUSTMENTS

1. CONFIRMATION AND ADJUSTMENT

Read the following NOTES before starting work.

- Place an object which weighs between 450g~500g on the Cassette Tape to keep it steady when you want to make the tape run without the Cassette Holder. (Do not place an object which weighs over 500g.)
- When you activate the deck without the Cassette Holder, short circuit between **TP1001** and **GND**. **(Refer to ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE)** In this condition the BOT/EOT/Reel Sensor will not function.

1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

1. Turn on the power and set to the STOP mode.
2. Set the master plane **(JG022)** and reel disk height adjustment jig **(JG024A)** on the mechanism framework, taking care not to scratch the drum, as shown in **Fig. 1-1-A**.
3. Confirm that "A" of the reel disk is lower than "B" of the reel disk height adjustment jig **(JG024A)** , and is higher than "C". If it is not enough height, adjust to 10(+0.2, -0) mm with the height adjustment washer.
4. Adjust the other reel in the same way.

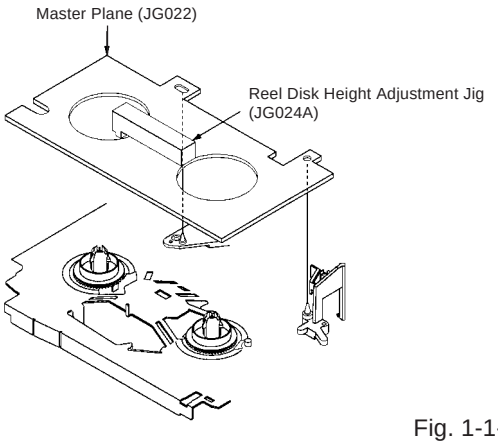


Fig. 1-1-A

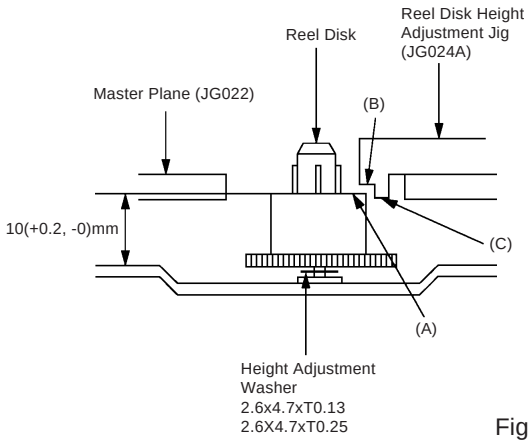


Fig. 1-1-B

1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

1. Set to the PLAY mode.
2. Adjust the Tension Adjust until the edge of the Tension Arm is positioning within 0.5mm range from the standard line center of Main Chassis.
   After this adjustment, confirm that the cut position is located in "A" area as shown in **Fig. 1-2-B**. If it is located in "B" area, adjust again.
3. While turning the S Reel clockwise, confirm that the edge of the Tension Arm is located in the position described above.

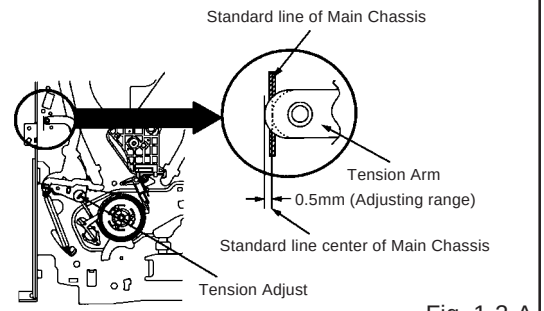


Fig. 1-2-A

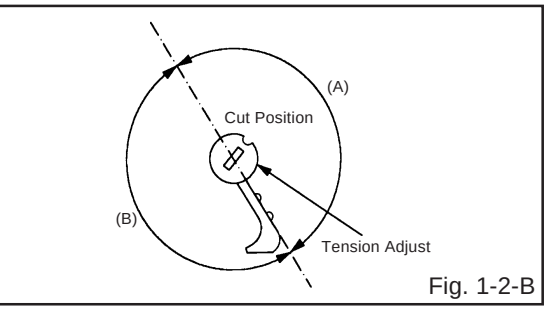


Fig. 1-2-B

1-3: CONFIRMATION OF PLAYBACK TORQUE AND BACK TENSION TORQUE DURING PLAYBACK

1. Load a video tape (T-120) recorded in standard speed mode. Set the unit to the PLAY mode.
2. Install the tentelometer as shown in **Fig. 1-3**. Confirm that the meter indicates 20 ± 2gf in the beginning of playback.

• USING A TORQUE CASSETTE GAUGE **(KT-300NR)**

1. After confirmation and adjustment of Tension Post position **(Refer to item 1-2)**, load the torque cassette gauge **(KT-300NR)** and set to the PLAY mode.
2. Confirm that the right meter of the torque tape indicates 60~110gf•cm during playback in SP mode.
3. Confirm that the left meter of the torque tape indicates 25~40gf•cm during playback in SP mode.

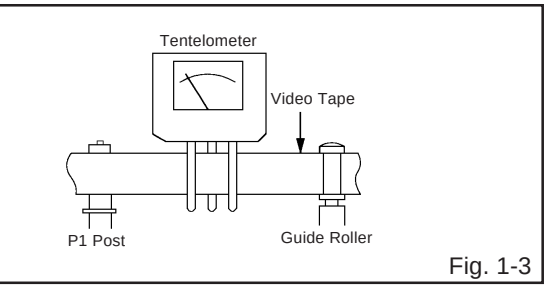


Fig. 1-3

MECHANICAL ADJUSTMENTS

1-4: CONFIRMATION OF VSR TORQUE

1. Operate within 4~5 seconds after the reel disk begins to turn.
2. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Set to the Rewind mode. **(Refer to Fig.1-4)**
3. Then, confirm that it indicates 120~180gf•cm.

NOTE

Install the Torque Gauge on the reel disk firmly. Press the REW button to turn the reel disk.

1-5: CONFIRMATION OF REEL BRAKE TORQUE

(S Reel Brake) **(Refer to Fig. 1-4)**

1. Set to the STOP mode.
2. Move the Idler Ass'y from the S Reel.
3. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Turn the Torque Gauge **(JG002F)** clockwise.
4. Then, confirm that it indicates 60~100gf•cm.

(T Reel Brake) **(Refer to Fig. 1-4)**

1. Set to the STOP mode.
2. Move the Idler Ass'y from the T Reel Ass'y.
3. Install the Torque Gauge **(JG002E)** and Adapter **(JG002B)** on the T reel. Turn the Torque Gauge **(JG002E)** counterclockwise.
4. Then, confirm that it indicates 45~70gf•cm.

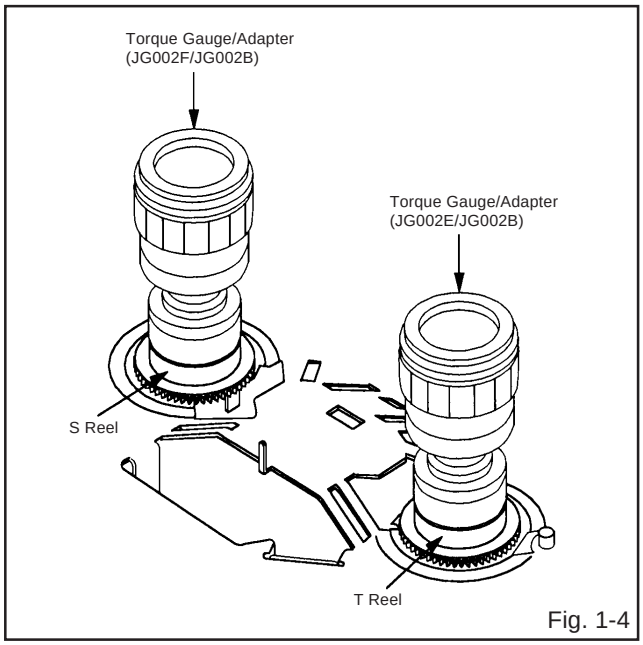


Fig. 1-4

NOTE

If the torque is out of the range, replace the following parts.

Check item	Replacement Part
1-4	Idler Ass'y/Clutch Ass'y
1-5	T Brake Spring/Tension Spring

2. CONFIRMATION AND ADJUSTMENT OF TAPE RUNNING MECHANISM

Tape Running Mechanism is adjusted precisely at the factory. Adjustment is not necessary as usual. When you replace the parts of the tape running mechanism because of long term usage or failure, the confirmation and adjustment are necessary.

2-1: GUIDE ROLLER

1. Playback the Alignment Tape.
2. Connect CH-1 of the oscilloscope to **TP4001 (Envelope)** and CH-2 to **TP1002 (SW Pulse)**.
3. Press and hold the TRACKING-AUTO button on the remote control more than 2 seconds to set tracking to center.
4. Trigger with SW Pulse and observe the envelope. **(Refer to Fig. 2-1-A)**
5. When observing the envelope, adjust the Taper Nut Driver slightly until the envelope will be flat.
   Even if you press the Tracking Button, adjust so that flatness is not moved so much.
6. Adjust so that the A : B ratio is better than 3 : 2 as shown in **Fig. 2-1-B**, even if you press the Tracking Button to move the envelope (The envelope waveform will begin to decrease when you press the Tracking Button).
7. Adjust the PG shifter during playback.
   (Refer to the ELECTRICAL ADJUSTMENTS)

NOTE

After adjustment, confirm and adjust A/C head.
(Refer to item 2-2)

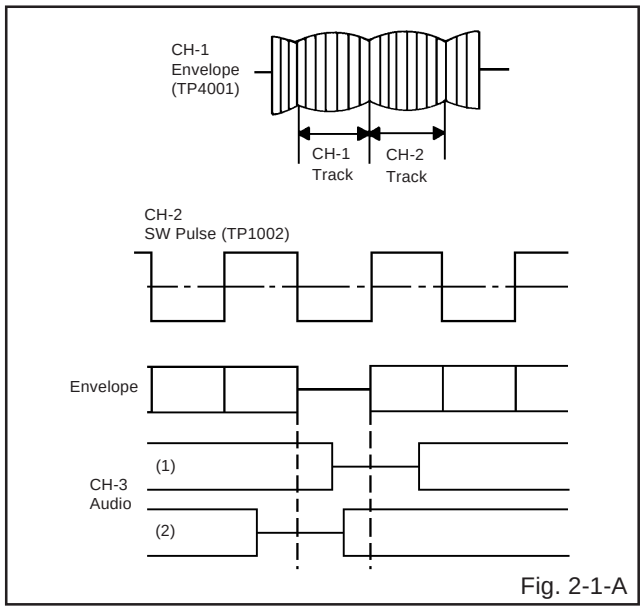


Fig. 2-1-A

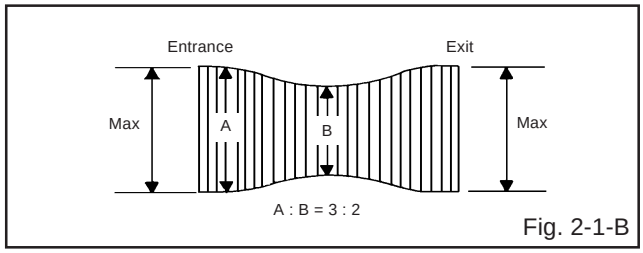


Fig. 2-1-B

MECHANICAL ADJUSTMENTS

2-2: CONFIRMATION AND ADJUSTMENT OF AUDIO/ CONTROL HEAD

When the Tape Running Mechanism does not work well, adjust the following items.

1. Playback the Alignment Tape.
2. Confirm that the reflected picture of stamp mark is appeared on the tape prior to P4 Post as shown in **Fig. 2-2-A**.
   a) When the reflected picture is distorted, turn the screw ① clockwise until the distortion is disappeared.
   b) When the reflected picture is not distorted, turn the screw ① counterclockwise until little distortion is appeared, then adjust the a).
3. Turn the screw ② to set the audio level to maximum.
4. Confirm that the bottom of the Audio/ Control Head and the bottom of the tape is shown in **Fig. 2-2-C**.
   c) When the height is not correct, turn the screw ③ to adjust the height. Then, adjust the 1~3 again.

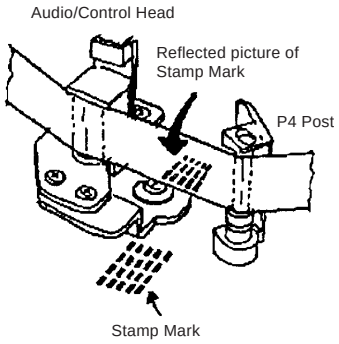


Fig. 2-2-A

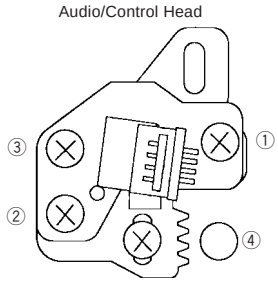


Fig. 2-2-B

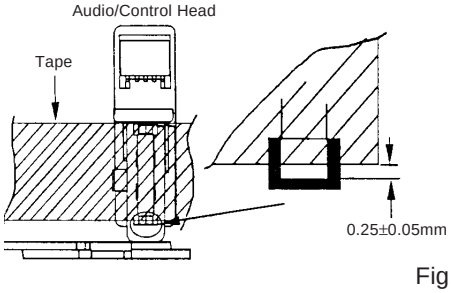


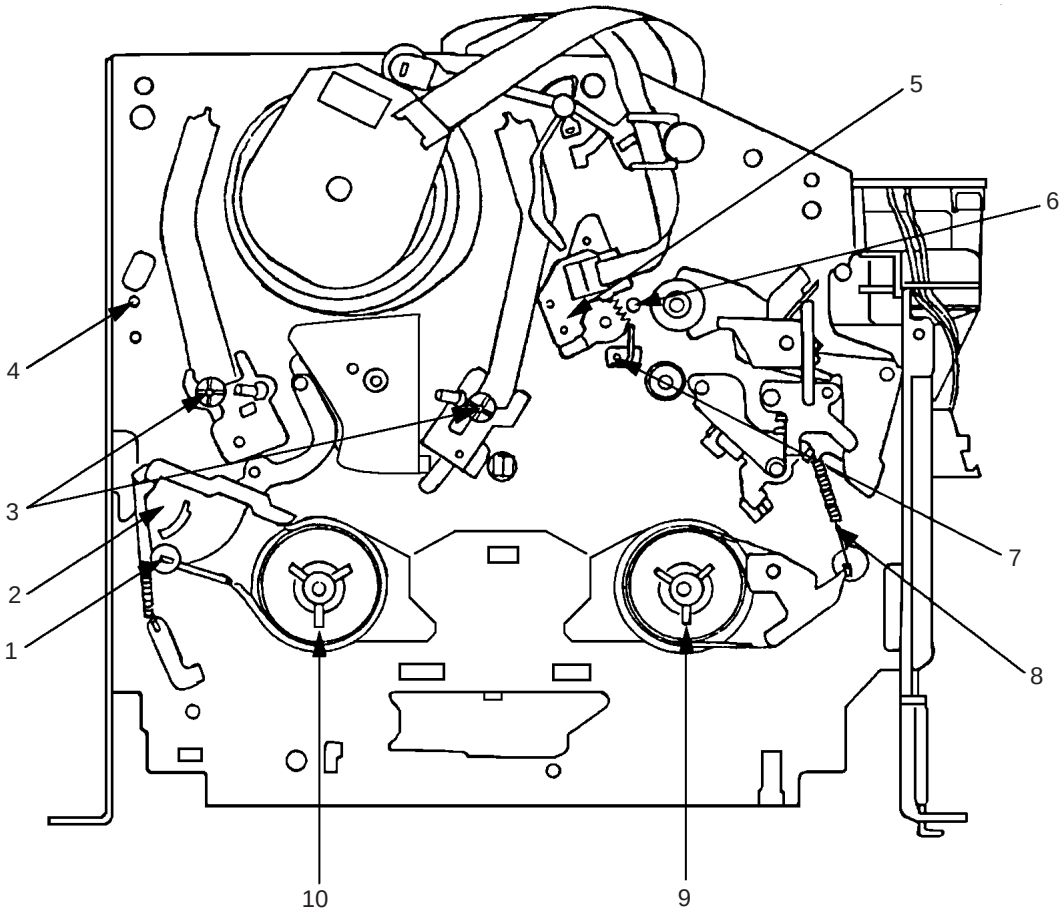
Fig. 2-2-C

2-3: TAPE RUNNING ADJUSTMENT (X VALUE ADJUSTMENT)

1. Confirm and adjust the height of the Reel Disk. **(Refer to item 1-1)**
2. Confirm and adjust the position of the Tension Post. **(Refer to item 1-2)**
3. Adjust the Guide Roller. **(Refer to item 2-1)**
4. Confirm and adjust the Audio/Control Head. **(Refer to item 2-2)**
5. Connect CH-1 of the oscilloscope to **TP4001**, CH-2 to **TP1002** and CH-3 to **HOT side of Audio Out Jack**.
6. Playback the Alignment Tape.
7. Press and hold the TRACKING-AUTO button on the remote control more than 2 seconds to set tracking to center.
8. Set the X Value adjustment driver **(JG153)** to the ④ of **Fig. 2-2-B**. Adjust X value so that the envelope waveform output becomes maximum. Check if the relation between Audio and Envelope waveform becomes (1) or (2) of **Fig. 2-1-A**.

MECHANICAL ADJUSTMENTS

3. MECHANISM ADJUSTMENT PARTS LOCATION GUIDE



1. Tension Adjust
2. Tension Arm
3. Guide Roller
4. P1 Post
5. Audio/Control Head
6. X value adjustment driver hole
7. P4 Post
8. T Brake Spring
9. T Reel
10. S Reel

ELECTRICAL ADJUSTMENTS

1. ADJUSTMENT PROCEDURE

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

- Use an isolation transformer when performing any service on this chassis.
- Before removing the anode cap, discharge electricity because it contains high voltage.
- When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.
  Inferior silicon grease can damage IC's and transistors.
- When replacing IC's and transistors, use only specified silicon grease.
  Remove all old silicon before applying new silicon.

On-Screen Display Adjustment

1. Unplug the AC plug for more than 5 seconds to set the clock to the non-setting state. Then, set the volume level to minimum.
2. Press the VOL. DOWN button on the set and the channel button **(9)** on the remote control simultaneously to display adjustment mode on the screen as shown in **Fig. 1-1**.

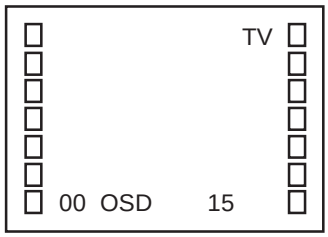


Fig. 1-1

3. Use the Channel UP/DOWN button or Channel button **(0-9)** on the remote control to select the options shown in **Fig. 1-2**.
4. Press the MENU button on the remote control to end the adjustments.

NO.	FUNCTION	NO.	FUNCTION
00	OSD H	13	BRIGHTNESS
01	CUT OFF	14	CONTRAST
02	RF DELAY	15	COLOR
03	VIF VCO	16	TINT
04	H VCO	17	SHARPNESS
05	H PHASE	18	FM LEVEL
06	V SIZE	19	LEVEL
07	V SHIFT	20	SEPARATION 1
08	R DRIVE	21	SEPARATION 2
09	B DRIVE	22	TEST MONO
10	R CUT OFF	23	TEST STEREO
11	G CUT OFF	24	X-RAY TEST
12	B CUT OFF		

Fig. 1-2

2. BASIC ADJUSTMENTS (VCR SECTION)

2-1: PG SHIFTER

1. Connect CH-1 on the oscilloscope to **TP1002** and CH-2 to **TP4201**.
2. Playback the alignment tape.
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. Press the VOL. DOWN button on the set and the channel button **(3)** on the remote control simultaneously until the indicator REC disappears. If the indicator REC disappears, adjustment is completed.

(If the above adjustments doesn't work well:)

5. Press the VOL. DOWN button on the set and the channel button **(3)** on the remote control simultaneously until the indicator REC disappears.
6. When the REC indicator is blinking, press both VOL. DOWN button on the set and the channel button **(4)** on the remote control simultaneously and adjust the Tracking +/- button until the arising to the down of Head Switching Pulse becomes 6.5 ± 0.5H.
   (Refer to Fig. 2-1-A, B)
7. Press the Tracking Auto button.

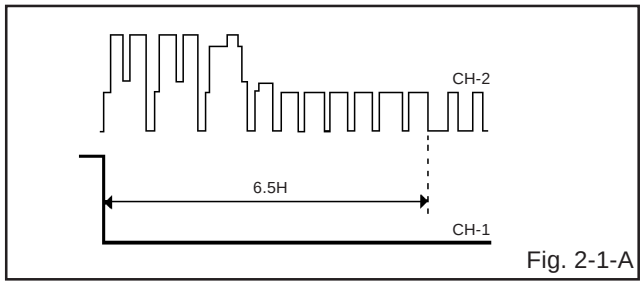


Fig. 2-1-A

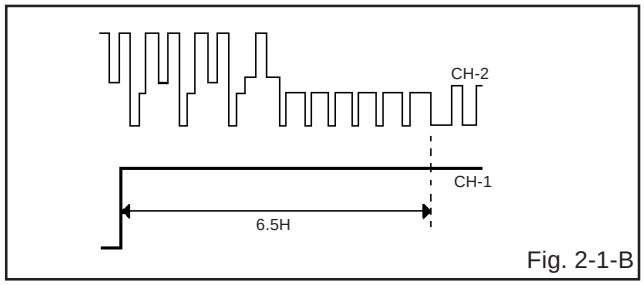


Fig. 2-1-B

2-2: VCO FREERUN

1. Place the set with Aging Test for more than 10 minutes.
2. Connect the digital voltmeter between the **pin 7 of CP602** and the **pin 1 (GND) of CP602**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(03)** on the remote control to select "VIF VCO".
4. Press the VOL. UP/DOWN button on the remote control until the digital voltmeter is 2.5V.

ELECTRICAL ADJUSTMENTS

2-3: RF AGC

1. Receive the VHF HIGH (70dB).
2. Connect the digital voltmeter between the **pin 5 of CP602** and the **pin 1 (GND) of CP602**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(02)** on the remote control to select "RF DELAY".
4. Press the VOL. UP/DOWN button on the remote control until the digital voltmeter is 2.7 ± 0.05V.

2-4: STEREO SEPARATION

1. Receive the stereo signal. (L=2KHz, R=400Hz)
2. Connect the AC voltmeter to **AUDIO OUT L/R** through stereo filter (L=400Hz, R=2KHz).
3. Press the AUDIO SELECT button on the remote control to set to the stereo mode.
4. Adjust by the **VR6001** so that the difference between with the stereo filter and without the stereo filter is more than 23dB.

(TV SECTION)

2-5: CONSTANT VOLTAGE

1. Connect the digital voltmeter to the **FUSE HOLDER of FH503**.
2. Set condition is AV MODE without signal.
3. Adjust the **VR502** until the DC voltage is 111 ± 0.5V.

2-6: OSD HORIZONTAL

1. Activate the adjustment mode display of **Fig. 1-1**.
2. Press the VOL. UP/DOWN button on the remote control until the difference of A and B becomes minimum. **(Refer to Fig. 2-3)**

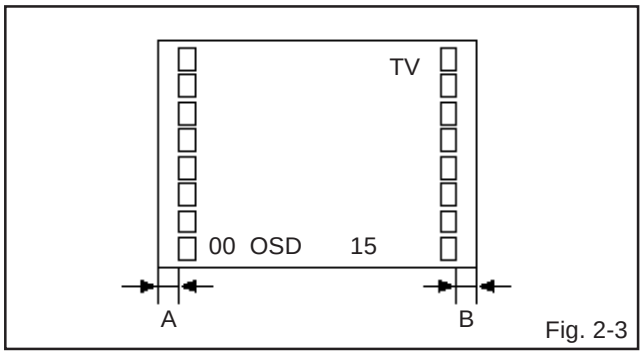


Fig. 2-3

2-7: CUT OFF

1. Adjust the unit to the following settings.
   R CUT OFF=128, G CUT OFF=128, B CUT OFF=128, R DRIVE=64, B DRIVE=64, BRIGHTNESS=128, CONTRAST=100
2. Place the set with Aging Test for more than 15 minutes.
3. Set condition is AV MODE without signal.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(01)** on the remote control to select "CUT OFF".
5. Adjust the **Screen Volume** until a dim raster is obtained.

2-8: WHITE BALANCE

NOTE: Adjust after performing CUT OFF adjustment.

1. Place the set with Aging Test for more than 15 minutes.
2. Receive the color bar pattern.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(10)** on the remote control to select "R CUT OFF".
5. Using the VOL. UP/DOWN button on the remote control, adjust the R CUT OFF.
6. Press the CH. UP/DOWN button on the remote control to select the "R DRIVE", "B DRIVE", "G CUT OFF" or "B CUT OFF".
7. Using the VOL. UP/DOWN button on the remote control, adjust the R DRIVE, B DRIVE, G CUT OFF or B CUT OFF.
8. Perform the above adjustments 6 and 7 until the white color is looked like a white.

2-9: FOCUS

1. Receive the monoscope pattern.
2. Turn the Focus Volume fully counterclockwise once.
3. Adjust the **Focus Volume** until picture is distinct.

2-10: HORIZONTAL PHASE

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(05)** on the remote control to select "H PHASE".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.

2-11: HORIZONTAL SIZE

NOTE: Adjust after performing adjustments in section 2-10.

1. Receive the monoscope pattern.
2. Adjust the **VR401** until the SHIFT quantity of the OVER SCAN on right and left becomes 10 ± 2%.

2-12: VERTICAL SIZE

NOTE: Adjust after performing adjustments in section 2-11.

1. Receive the cross hatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(06)** on the remote control to select "V SIZE".
4. Press the VOL. UP/DOWN button on the remote control until the rectangle on the center of the screen becomes square.
5. Receive a broadcast and check if the picture is normal.

ELECTRICAL ADJUSTMENTS

2-13: VERTICAL POSITION

NOTE: Adjust after performing adjustments in section 2-12.

1. Receive the center cross signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(07)** on the remote control to select "V POSI".
4. Press the VOL. UP/DOWN button on the remote control until the horizontal line becomes fit to the notch of the shadow mask.

2-14: SUB BRIGHTNESS

1. Receive the black pattern*. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(13)** on the remote control to select "BRIGHTNESS".
4. Press the VOL. UP/DOWN button on the remote control until the screen begin to shine.
5. Receive the black pattern*. (Audio Video Input)
6. Press the TV GAME button on the remote control to set to the AV mode. Then perform the above adjustments 2~4.

*The Black Pattern means the whole black raster signal. Select the "RASTER" of the pattern generator, set to the OFF position for each R, G and B.

2-15: SUB CONTRAST

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(14)** on the remote control to select "CONTRAST".
2. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "90"
3. Press the TV GAME button on the remote control to set to the AV mode. Then perform the above adjustments 1~2.

2-16: SUB TINT

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast, color and tint to normal position.
3. Connect the synchro scope to **TP806**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(16)** on the remote control to select "TINT".
5. Press the VOL. UP/DOWN button on the remote control until the section "A" becomes a straight line. **(Refer to Fig. 2-4)**
6. Increase the step numbers "4" steps with the VOL. UP button on the remote control.
7. Receive the color bar pattern. (Audio Video Input)
8. Press the TV GAME button on the remote control to set to the AV mode. Then perform the above adjustments 2~6.

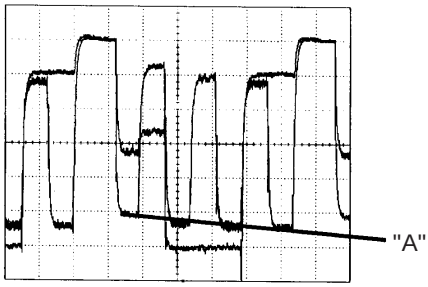


Fig. 2-4

2-17: SUB COLOR

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast, color and tint to normal position.
3. Connect the synchro scope to **TP804**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(15)** on the remote control to select "COLOR".
5. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4 scales on the screen of the oscilloscope.
6. Press the VOL. UP/DOWN button on the remote control until the red color level is adjusted to 110 ± 5% of the white level. **(Refer to Fig. 2-5)**
7. Receive the color bar pattern. (Audio Video Input)
8. Press the TV GAME button on the remote control to set to the AV mode. Then perform the above adjustments 2~6.

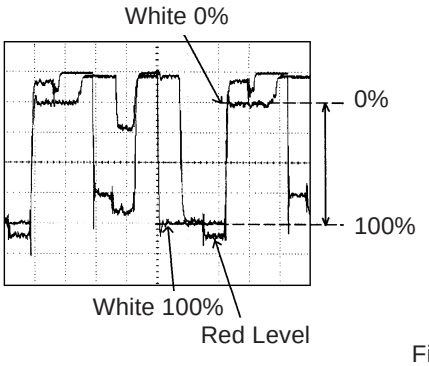


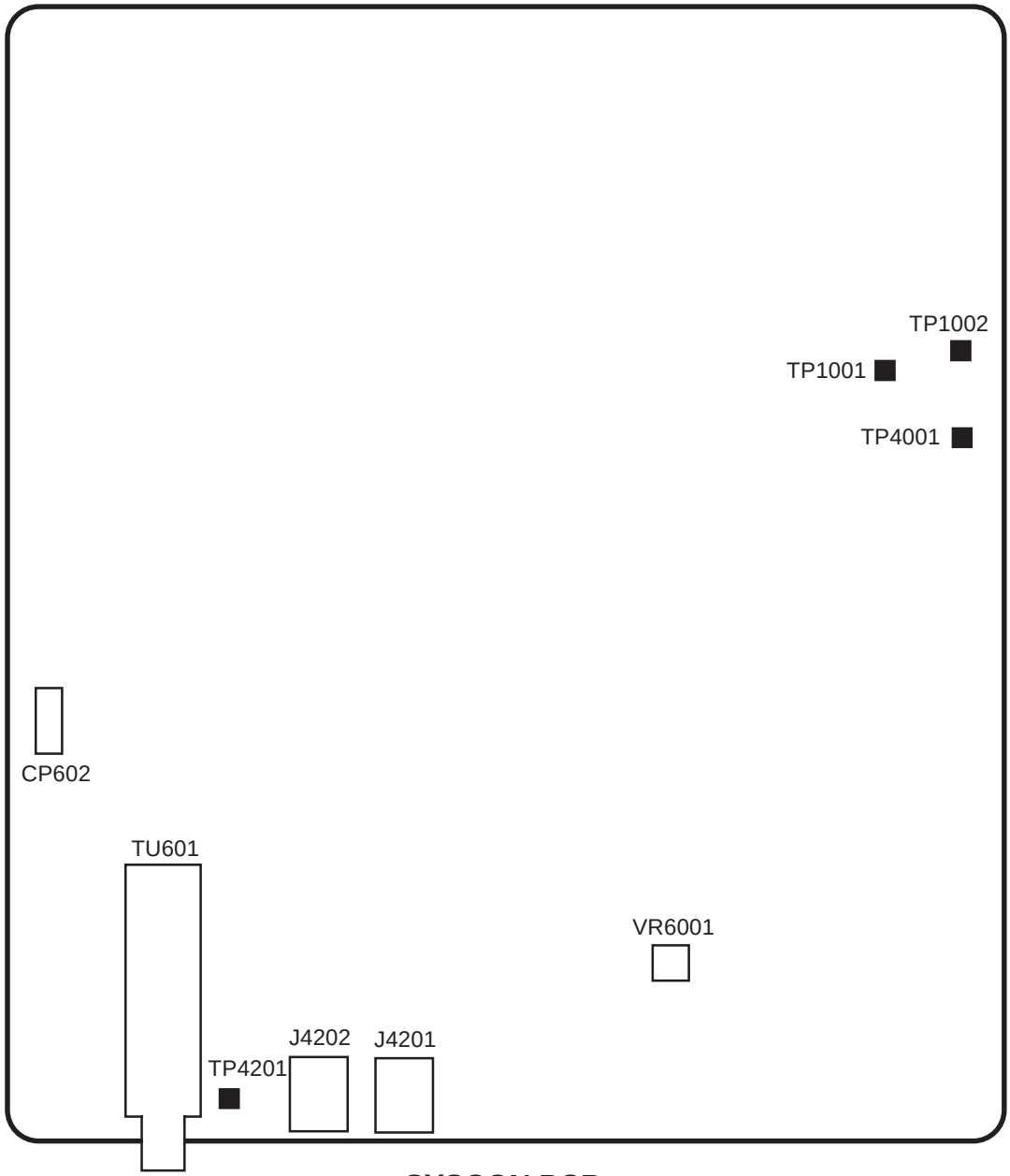
Fig. 2-5

2-18: PIN CUSHION (PCC)

1. Receive the color bar pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Adjust the **VR402** until the right and left vertical line becomes straight.

ELECTRICAL ADJUSTMENTS

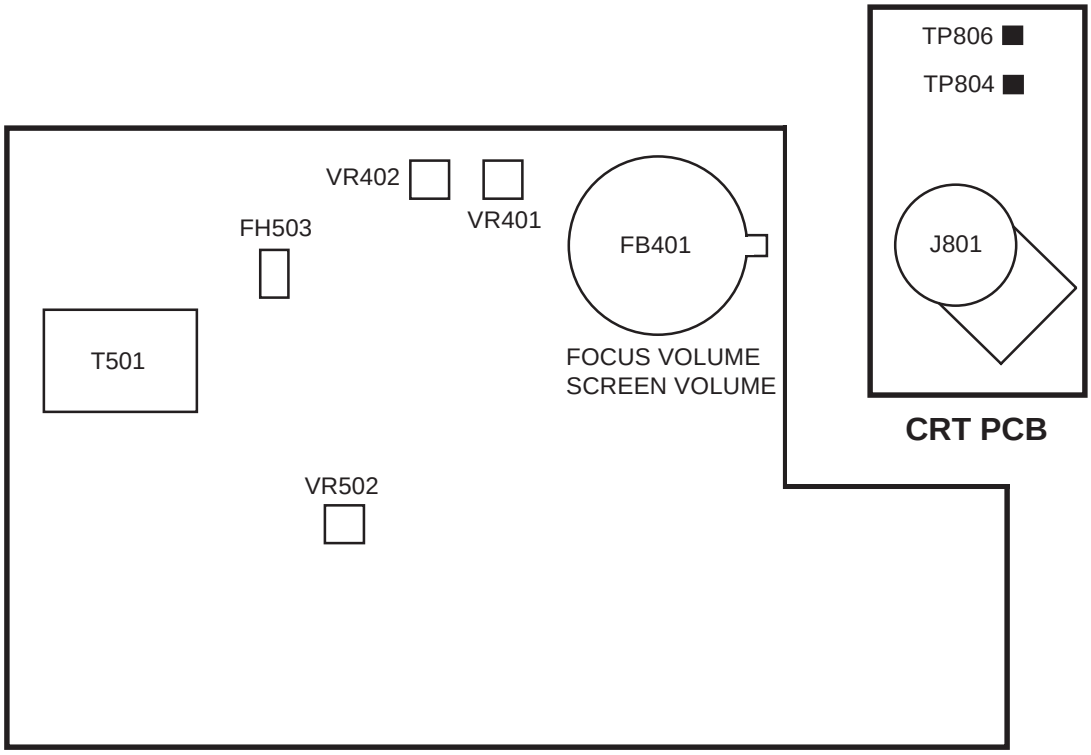
3. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (VCR SECTION)



SYSCON PCB

ELECTRICAL ADJUSTMENTS

(TV SECTION)



CRT PCB

MAIN PCB

ELECTRICAL ADJUSTMENTS

4. PURITY AND CONVERGENCE ADJUSTMENTS

NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

4-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 4-1)**
   If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

4-2: PURITY

NOTE

Adjust after performing adjustments in section 4-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
   Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue colors.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

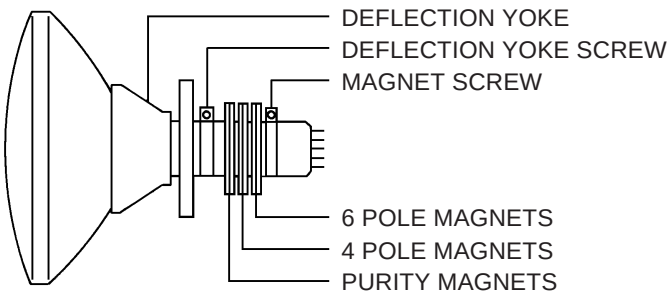


Fig. 4-1

4-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 4-2.

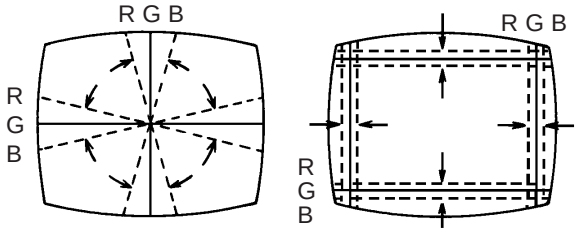
1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

4-4: DYNAMIC CONVERGENCE

NOTE

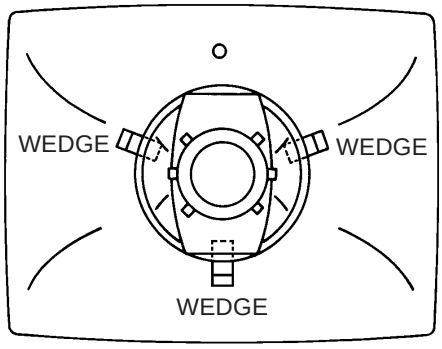
Adjust after performing adjustments in section 4-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left.
   (Refer to Fig. 4-2-a)
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke.
   (Refer to Fig. 4-2-b)



UPWARD/DOWNWARD SLANT RIGHT/LEFT SLANT

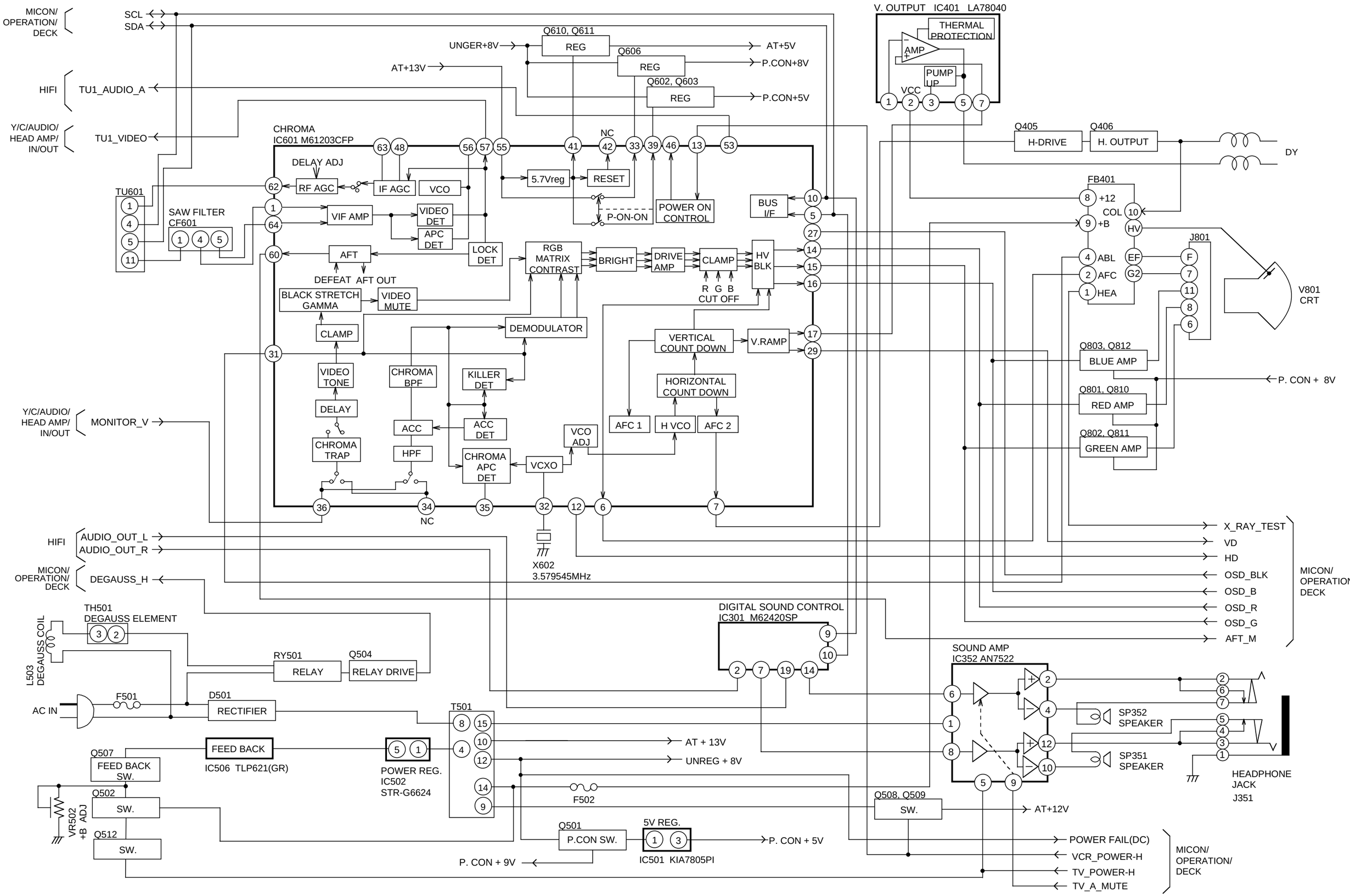
Fig. 4-2-a



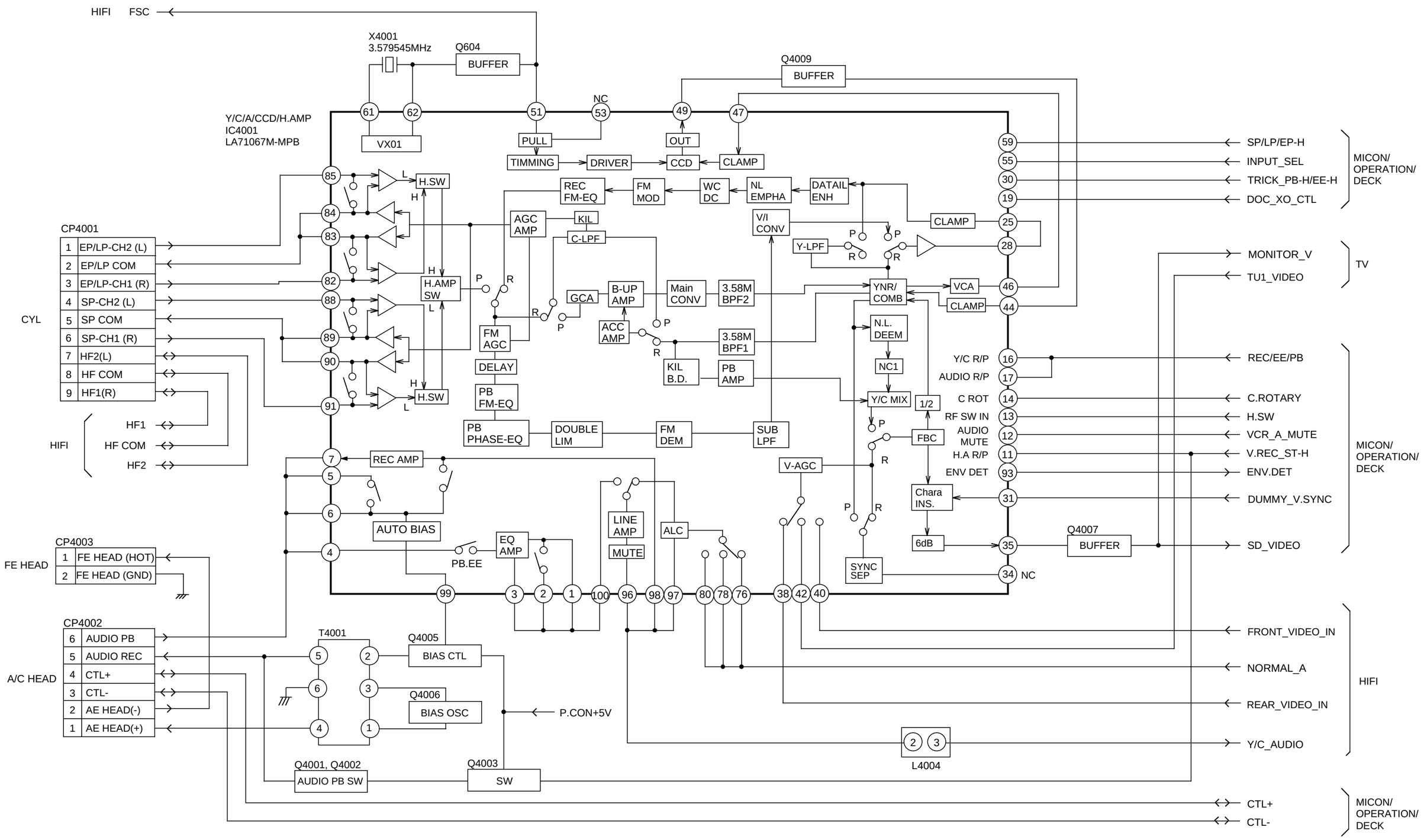
WEDGE POSITION

Fig. 4-2-b

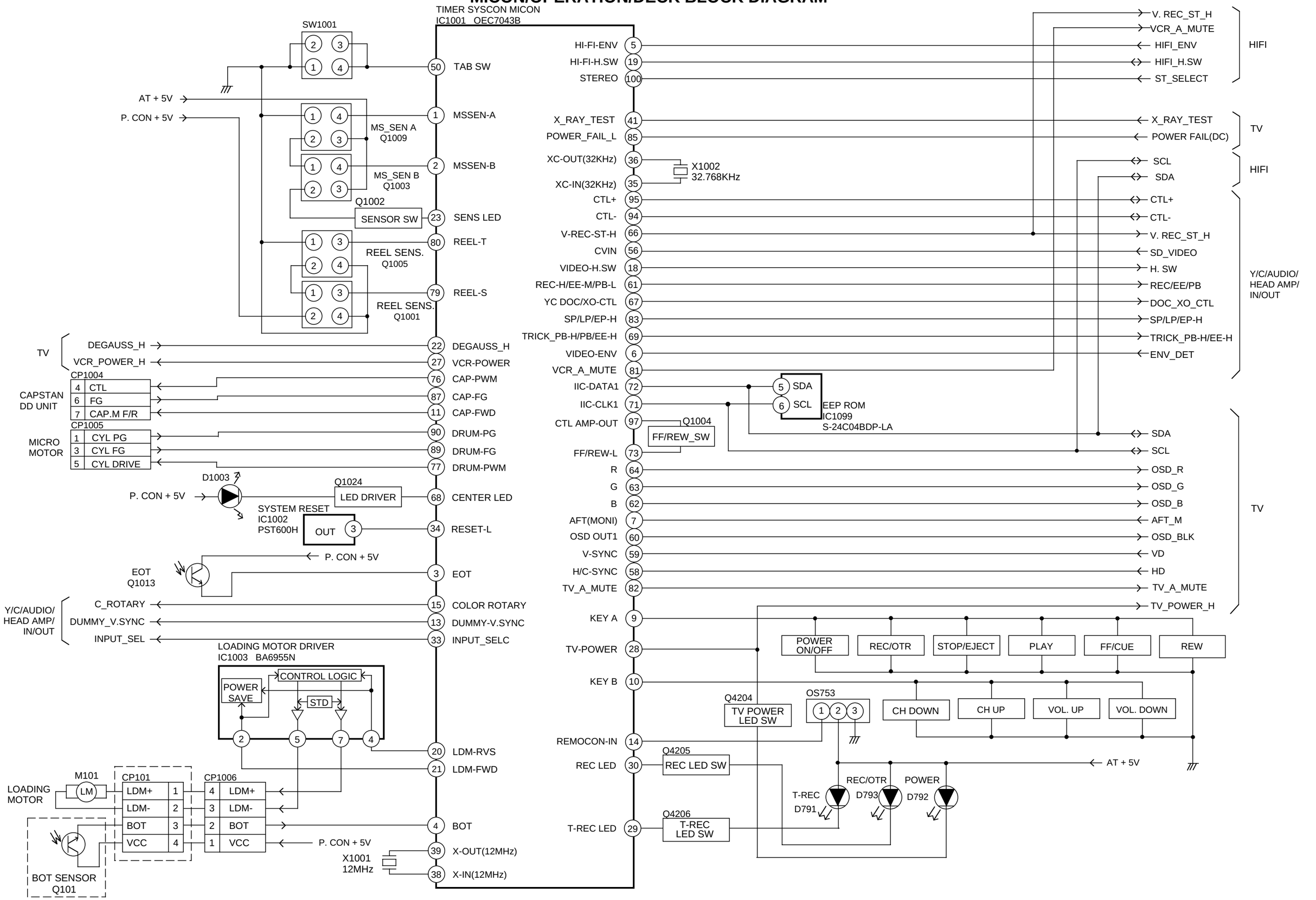
TV BLOCK DIAGRAM



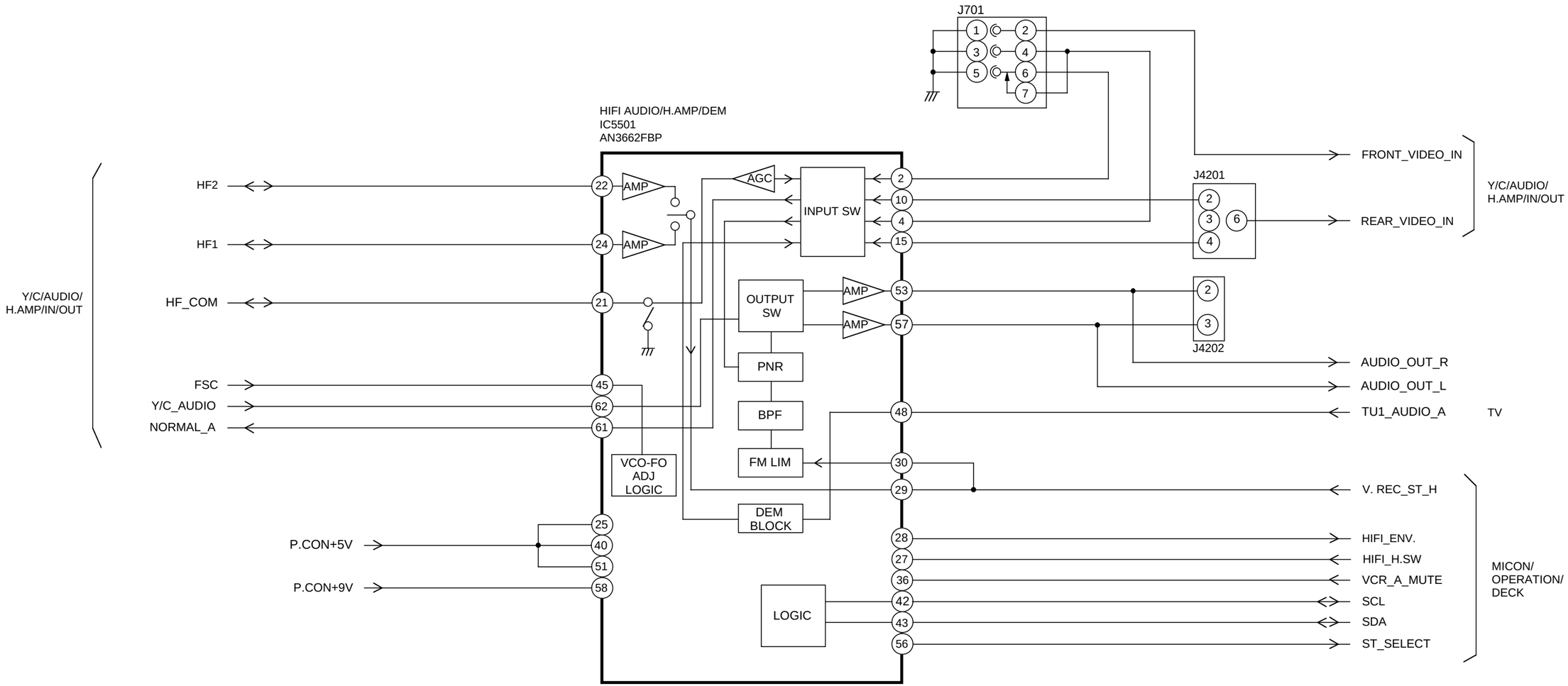
Y/C/AUDIO/HEAD AMP/IN/OUT BLOCK DIAGRAM



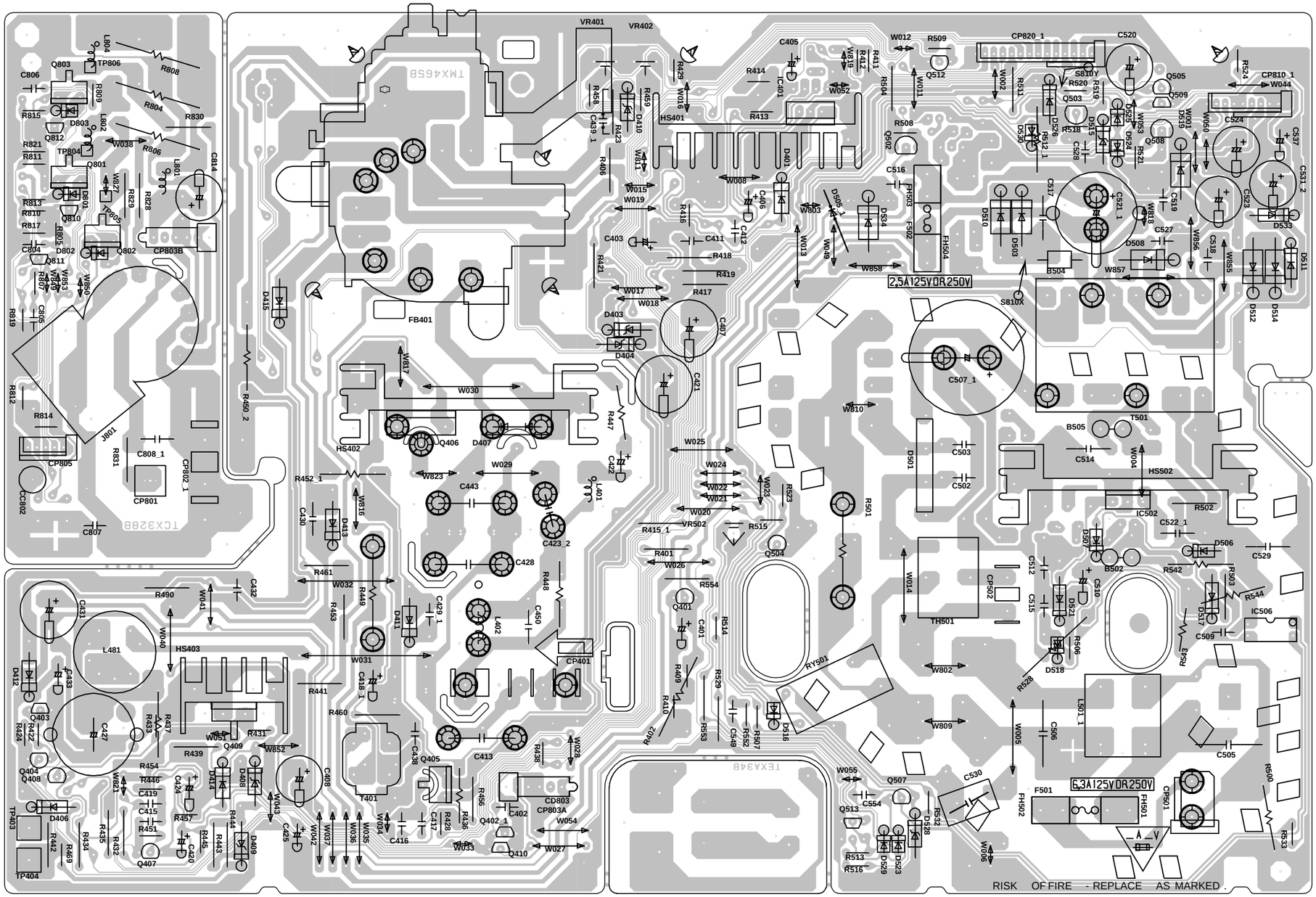
MICON/OPERATION/DECK BLOCK DIAGRAM



HIFI BLOCK DIAGRAM

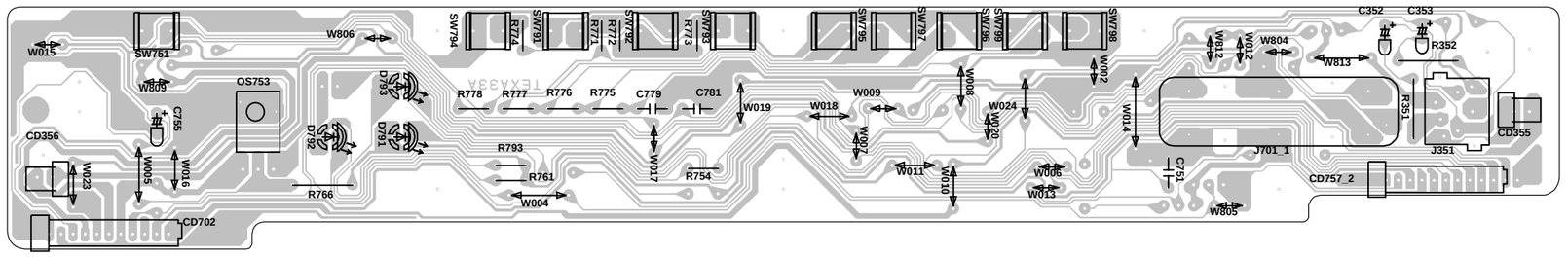


PRINTED CIRCUIT BOARDS
MAIN/CRT
SOLDER SIDE

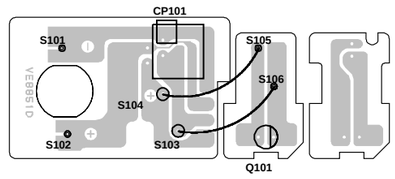


PRINTED CIRCUIT BOARDS

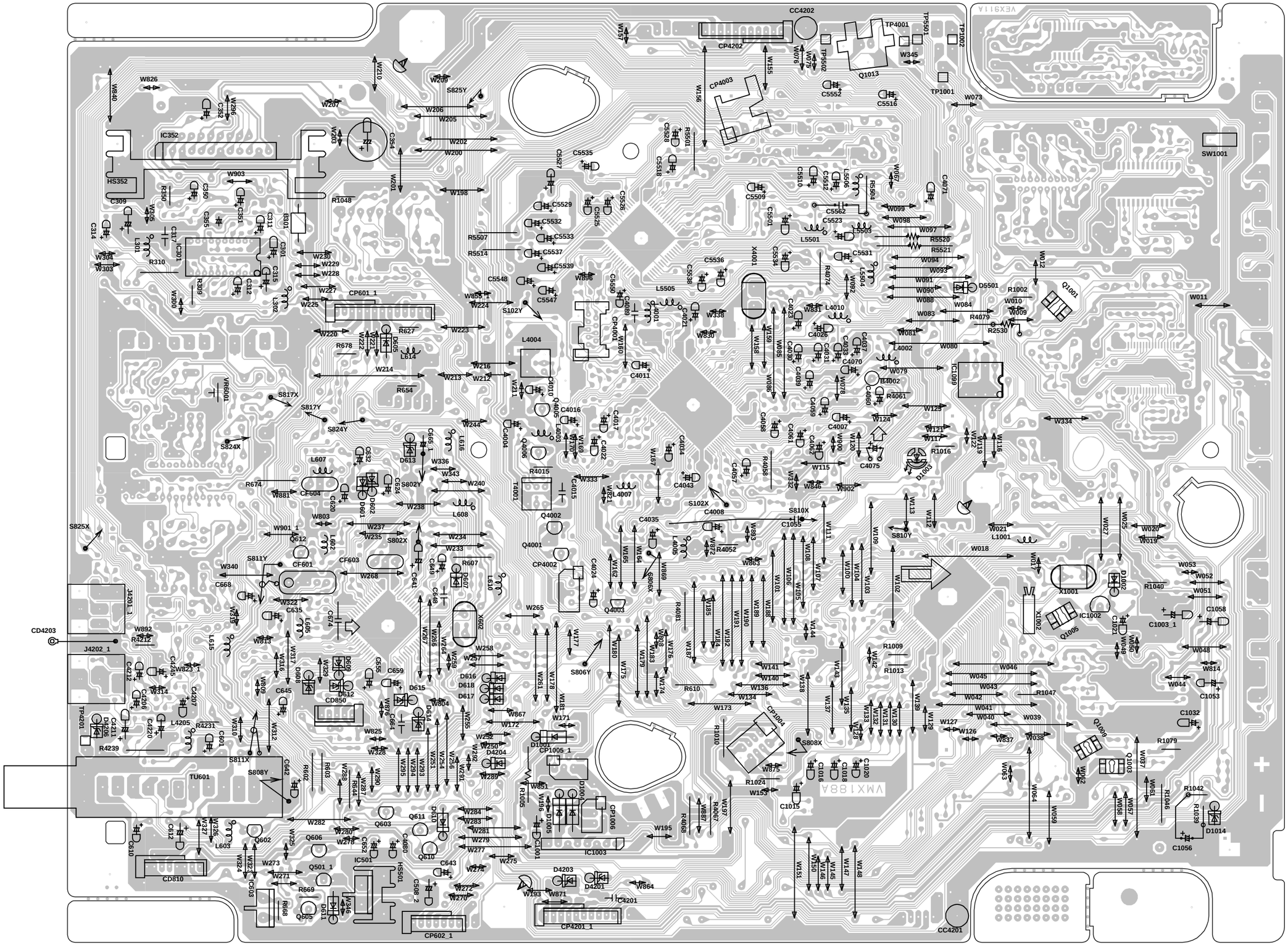
OPERATION
SOLDER SIDE



DECK
SOLDER SIDE



PRINTED CIRCUIT BOARDS
SYSCON (INSERTED PARTS)
SOLDER SIDE


CC4202
CP4202
TP4001
TP5501
TP1002
TP5502
Q1013
W345
TP1001
W073
W157
W155
W156
CP4003
W076
W075
C5552
C5516
W826
W840
W210
W208
S825Y
W207
W206
W205
W202
W200
W203
C354
C352
W296
IC352
HS352
C309
W903
R350
C350
C351
C311
B301
C314
C317
C301
L301
W304
W303
R310
W305
C315
C312
R309
W307
L302
W230
W229
W228
W227
W225
CP601_1
W201
W198
R1048
C5527
C5535
C5529
C5532
C5533
C5537
C5539
C5548
C5547
C5550
C5526
C5525
R5507
R5514
W853
W224
S102Y
W896
L5505
C4088
C4001
CP4001
W160
C4011
C4021
W338
W220
W223
R627
D605
L614
R678
W222
W221
W214
W216
W213
W212
L4004
C4010
Q4005
L4003
W170
C4016
C4017
W168
C4022
W211
R654
VR6001
S817X
S817Y
S824Y
S824X
W244
C4004
Q4006
C4034
W167
C4043
R4015
W333
C4015
L4007
W321
T4001
Q4002
S102X
C4008
S810X
C4035
W883
W972
R4052
W165
W164
W162
W969
S809X
C4024
Q4003
Q4001
CP4002
C1055
W111
W109
W108
W107
W106
W105
W104
W103
W102
S810Y
W113
W112
W021
L1001
W018
W017
W027
W025
W020
W019
SW1001
W053
W052
W051
R1040
C1058
C1003_1
W048
W814
W044
C1053
C1032
R1079
W037
W062
W061
R1042
R1039
D1014
C1056
W334
W122
W119
W116
R1016
D1003
W123
W124
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W117
W120
W900
C4007
C4075
C4059
C4061
C4062
C4088
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W346
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C4037
R4061
C4060
B4002
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C4070
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C4026
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L4010
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D4204
D1001
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W851
R1005
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D1005
CP1006
IC1003
W195
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R4067
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R610
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R1013
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CP1004
R1010
S808X
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C1020
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R1024
C1015
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W064
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W057
R1046
D4203
D4201
W864
C4201
CP4201_1
W193
W871
CD4203
J4202_1
J4201_1
W892
R4212
W823_1
C4212
C4205
C4206
C4211
C4220
C4207
L4205
R4231
C601
W310
W312
R4239
TP4201
S811X
TU601
S808Y
C642
R602
R603
W283
R644
W287
W290
W282
W280
W278
C652
IC501
HS501
C4600
Q611
D610
Q603
Q606
Q602
Q501_1
W273
W271
R669
Q605
D611
W346
C603
W324
W323
W326
W327
C612
C610
CD810
C643
W274
W272
W270
C508_2
CP602_1
W275
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C664
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C645
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CD850
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W809
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C635
C674
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C668
C648
C641
C643
D607
L610
W268
CF603
CF601
S811Y
Q612
W901_1
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W235
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S802Y
D602
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C624
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C620
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CF604
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C661_1
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R5504
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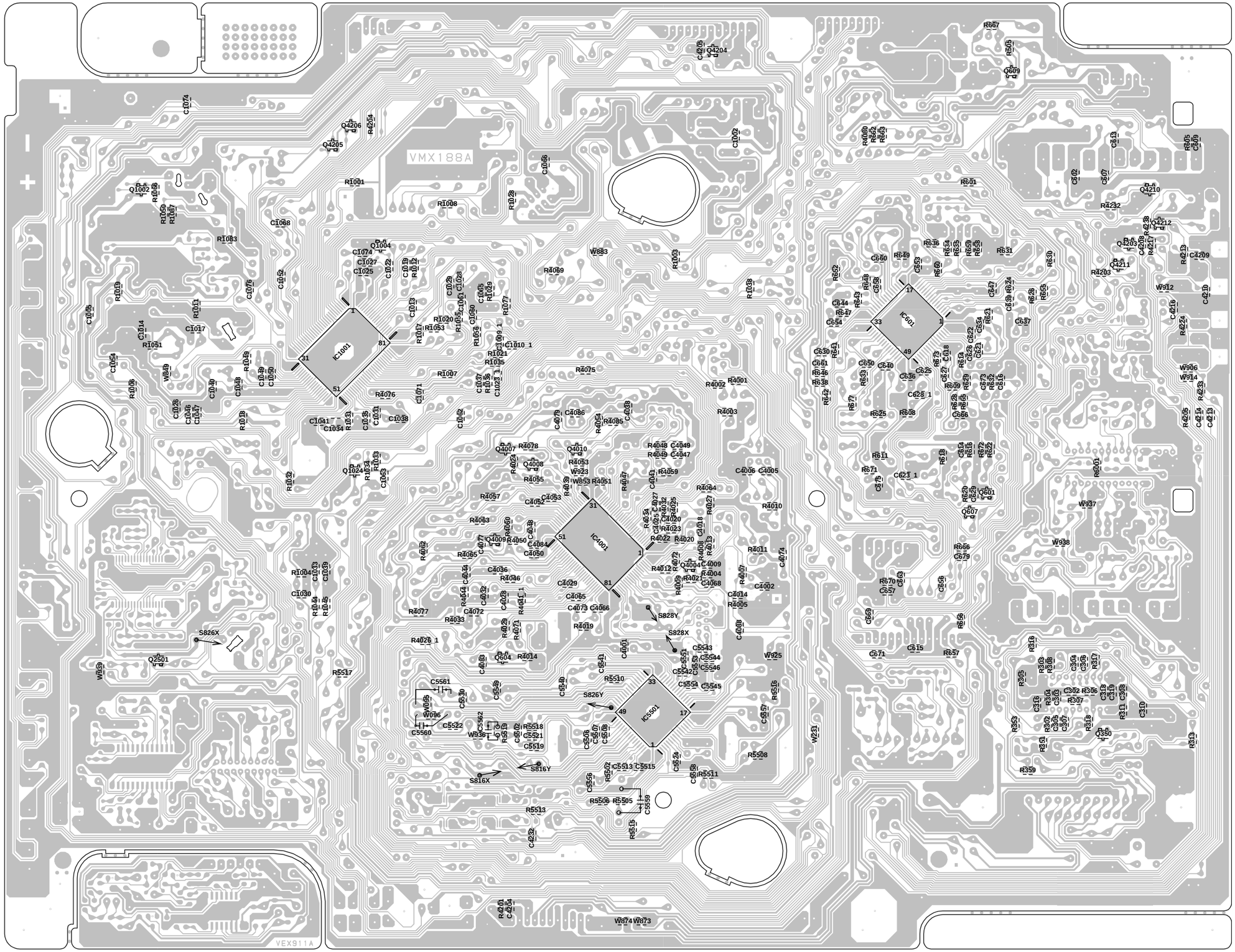
R4212
R4212
R4212

PRINTED CIRCUIT BOARDS
SYSCON (CHIP MOUNTED PARTS)
SOLDER SIDE

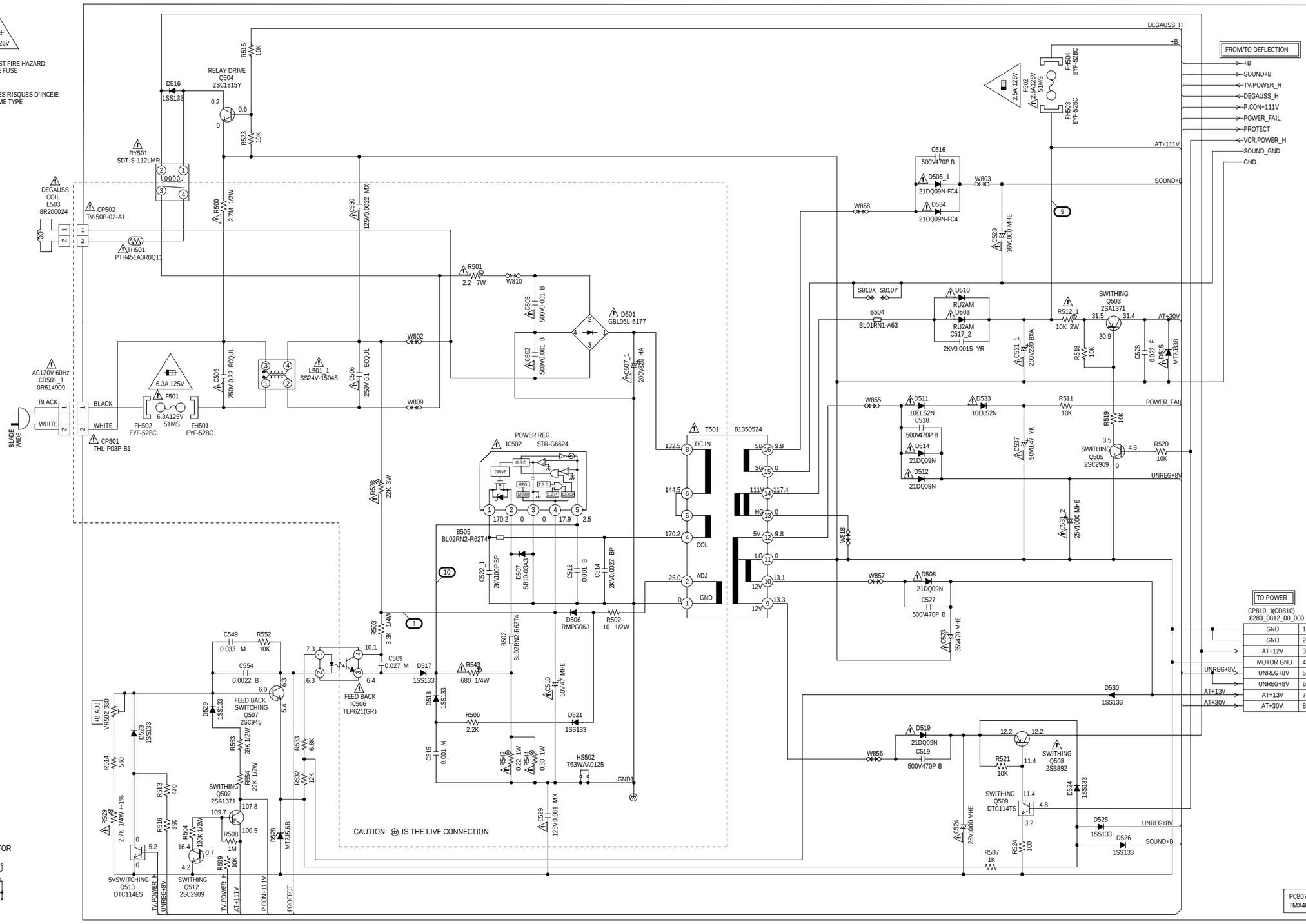


TV POWER SCHEMATIC DIAAGRAM (MAIN PCB)

6.3A 125V 2.5A 125V

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE
6.3A 125V(F501) ,2.5A 125V(F502).

ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES D'INCEIE N'UTILISER QUE DES FUSIBLE DE MEME TYPE
6.3A 125V(F501) ,2.5A 125V(F502).



NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR.
THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

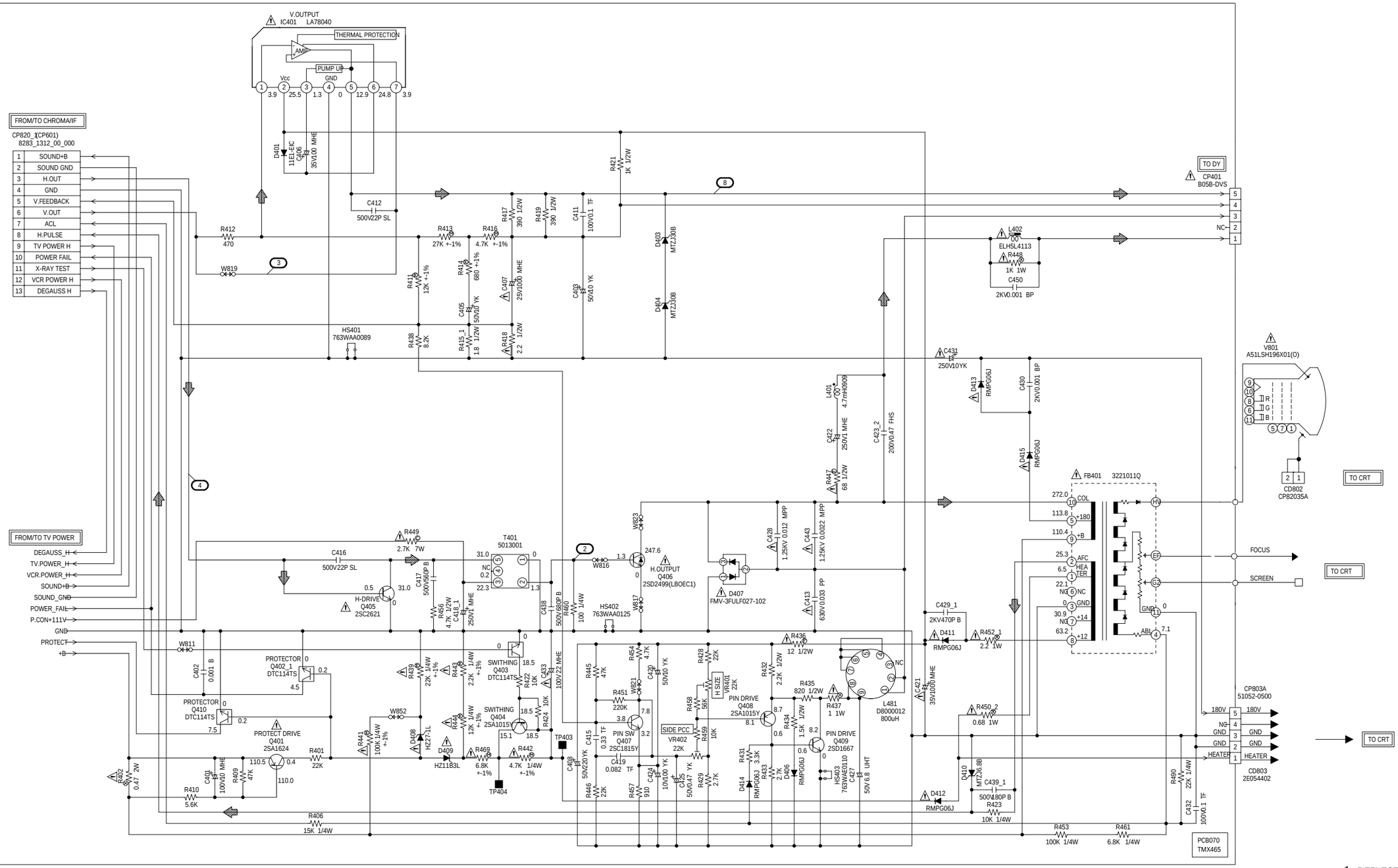
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

DEFLECTION SCHEMATIC DIAGRAM (MAIN PCB)



DEFLECTION SIGNAL

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR. THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

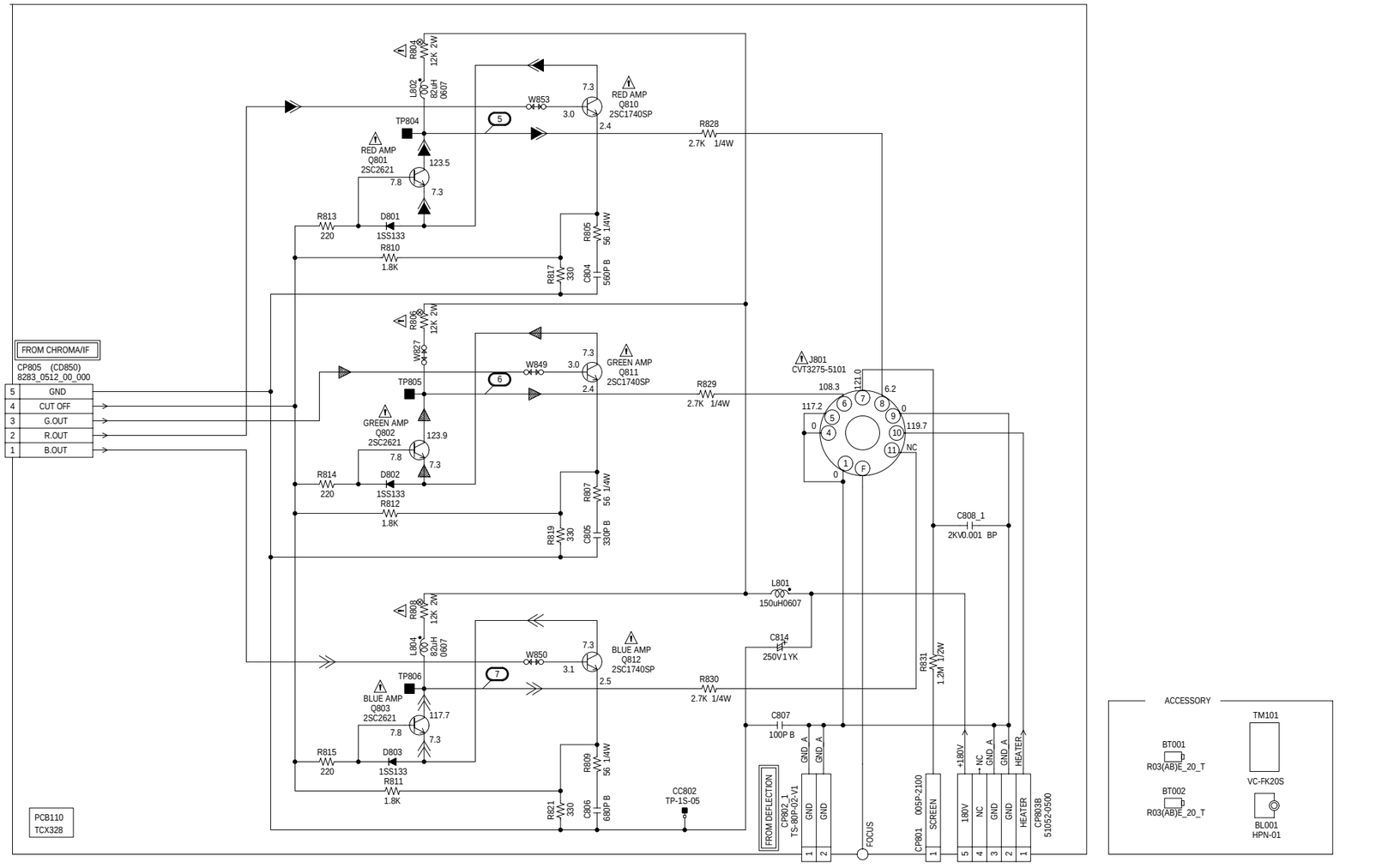
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

CAUTION: DIGITAL TRANSISTOR

CRT SCHEMATIC DIAGRAM

(CRT PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

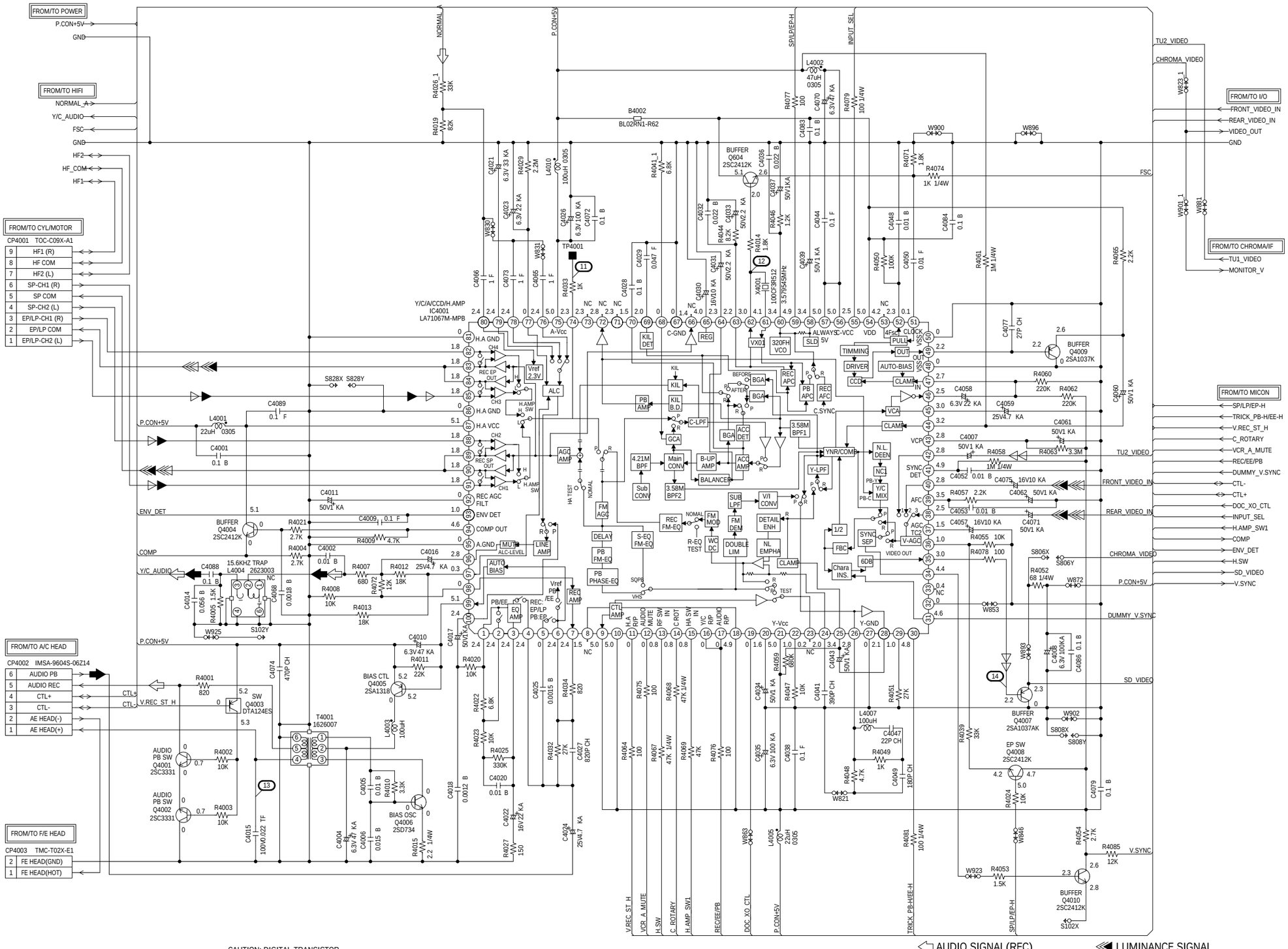
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

◀ R.SIGNAL
◀ G.SIGNAL
≪ B.SIGNAL

Y/C/AUDIO/HEAD AMP SCHEMATIC DIAGRAM (SYSCON PCB)



MICON SCHEMATIC DIAGRAM (SYSCON PCB)

FROM/TO POWER
GND
AT+5V[UCON]
AT+5V[BACKUP]
P.CON+5V
AT+12V
MOTOR_GND

LOADING MOTOR DRIVER
IC1003 BA6955N
CONTROL LOGIC
STD
POWER SAVE
C1001 25V100 YK
D1004 RD12FB
D1005 11E1-EIC
D1001 11E1-EIC
R1005 2.7 1W
LDM_F
LDM_R
LM-
LM+

FROM/TO DECK
CP1006 IMSA-9604S-04Z14
1 VCC
2 BOT
3 LDM-
4 LDM+
EOT
BOT
CENTLED
Q1013 PNA2604M010R
D1003 SID1050CM
R1011 2.2K
R1003 82K
R1018 4.7K
R1055 270 1/4W
SW1001 SPVF130100
C1063 0.1 F
LED DRIVER Q1024 DTC143EKA

FROM/TO MICRO MOTOR
CP1005_1 IMSA-9604S-05Z14
5 CYL DRIVE
4 CYL GND
3 CYL FG
2 CYL +B
1 CYL PG
W851
CYL_DRIVE
CYL_FG
CYL_PG

FROM/TO CAPSTAN DD UNIT
CP1004 TMC-J08P-B1
1 GND
2 MOTOR GND
3 I LIMIT
4 CTL
5 VCO
6 FG
7 CAP.M F/R
8 VCC(5V)
C1066 0.1 B
CAP_CTL
CAP_FG
CAP_F/R
R1010 3.3K 1/4W
W814

POWER_FAIL[DC]
CAP_CTL
CYL_DRIVE
REEL_T
REEL_S
C1028 0.1 B
C1029 0.01 B
C1061 150P CH
SDA
SCL
C1060 150P CH
TRICK_PB-H/EE-H
CENTLED
DOC_XO_CTL
V.REC_ST_H
OSD_R
OSD_G
OSD_B
REC/EE/PB
OSD_BLK
C1071 100P CH
R1028 4.7K
R1029 4.7K
R1044 3.3K
R1045 3.3K
R1053 220
C1009_1 330P CH
C1010_1 330P CH
C1023_1 330P CH
R1038 4.7K
C1037 220P CH
R1048 1K 1/4W
C1041 0.1 B
SERVICE TP1001
R1032 10K
V.SYNC
W867
W808
C1034 0.1 F
C1035 200P CH
C1031 0.001 B
R1031 1K
C1055 0.1 F
S810Y
S810X
C1038 390P CH
R1033 1K
C1062 1 B
W869
TAB_SW
R1034 1M
R1042 1K 1/4W
C1056 50V1 KA
R1039 18K 1/4W
D1014 MTZJ5.1B
W849
R1017 33K
R1020 22K
R1055 220
R1056 220
R1007 33
R1021 33
R1035 33
R1036 10
W875
R1008 1K
C1013 0.0039 B
C1054 0.1 F
C1015 10V47 KA
C1016 16V22 KA
C1018 50V4.7 KA
R1009 560 1/4W
R1013 560 1/4W
C1019 0.001 CH
C1020 16V10 KA
R1012 10K
C1022 0.1 B
C1027 0.0039 B
FF/REW_SW Q1004 DTC124EKA
C1025 0.1 B
C1002 0.001 B
C1005 0.001 B
R1025 10K
ST_SELECT
TAB_SW
C_ROTARY
H.SW
H.AMP_SW1
CAP_F/R
W887
W863
R1024 1K 1/4W
W837
R1001 3.3K
H.SW TP1002
C1033 68P CH
C1039 68P CH
C1068 0.1 B
C1052 0.1 B
C1030 0.1 B
R1004 1K
EEP ROM IC1003 S-24C04BDP-LA
TV_POWER_H
VCR_POWER_H

TIMER SYSCON MICOM IC1001 OEC7043B
MSSEN-A
MSSEN-B
EOT
BOT
HI-FI-ENV
VIDEO-ENV
AFT(MONI)
AFT(REC)
KEY A
KEY B
CAP-FWD
CAP-LIMIT
DUMMY-V.SYNC
REMOCON-IN
COLOR ROTARY
HEAD AMP SW
ENV-CMP-IN
VIDEO-H.SW
HI-FI-H.SW
LDM-RVS
LDM-FWD
DEGAUSS_H
SENS LED
AV_3 / SP-H
IIC-OFF
EXT-MUTE
VCR-POWER
TV-POWER
T-REC LED
REC LED
NC

81 VCR_A_MUTE
82 TV_A_MUTE
83 SP/LP/EP-H
84 TUNER CTL/CM/MA_SEL
50 TAB SW
49 OSD-VSS
48 CM_ADV_AUDIO/AV2
98 AMP-VCC
99 ANALOG VCC
100 STEREO
33 INPUT_SELC
32 RENT_H /OTPB LED
31 ON-TIMER LED

VCR_A_MUTE
TV_A_MUTE
SP/LP/EP-H
POWER_FAIL_L
CFG AMP-OUT
CAP-FG
AMP-VSS
DRUM-FG
DRUM-PG
AMP-VREFOUT
AMP-VREFIN
C
CTL-
CTL+
AMP C
CTL AMP-OUT
REEL-T
REEL-S
ENV_MASK/PLAY_LED
DRUM-PWM
CAP-PWM
75 TONE CONTROL
74 JUST CLOCK
73 FF/REW-L
72 IIC-DATA1
71 IIC-CLK1
70 EXT A MUTE / TRICK PB-H
69 TRICK PB-H / PB/EE-H
CENTER LED
67 YC DOC/XO CTL
65 V-REC-ST-H
66 CAP FULL
64 R
63 G
62 B
REC-H/EE-M/PB-L
60 OSD OUT1
59 V-SYNC
58 H/C-SYNC
57 NUA
56 CVIN
55 VHOLD
54 HLF
53 OSD-VCC
52 SD-IN(MONI)
SERVICE
CM_ADV_VIDEO/AV2
NUB
OSC-OUT2
OSC-IN2
CLKSEL
CS_EASY_REC_LED
X RAY TEST
VSS
X-OUT(12MHz)
X-IN(12MHz)
VCC
XC_OUT(32KHz)
XC_IN(32KHz)
RESET-L
INPUT_SEL
L1001 2.2uH
C1046 18P CH
C1047 18P CH
R1040 33K 1/4W
X1001 12MHz
C1040 18P CH
C1048 18P CH
C1026 0.1 B
X1002 32.768KHz
C1049 22P CH
C1050 20P CH
RESET
X_RAY_TEST

SYSTEM RESET IC1002 PST600H
IN GND OUT
D1002 1SS133
R1049 4.7K
R1051 5.6K
C1003_1 6.3V1000 YK
C1017 0.1 B
C1021 16V33 KA
C1014 0.1 F
C1053 6.3V220 YK
C1058 6.3V100 YK
C1074 0.1 B
C1076 220P CH
R1066 1K
C1032 6.3V 220 KA
R1046 4.7K 1/4W
R1047 4.7K 1/4W
R1019 47K
R1006 47K
R1002 120 1/4W
R1079 22 1/4W
SENSOR SW Q1002 2SC2412K
MS_SEN A Q1009 GP1S94L
MS_SEN B Q1003 GP1S94L
R1083 56K
R1050 56K
R1087 56K
REEL SENS Q1005 RPI-301
REEL SENS Q1001 RPI-301
RESET
AT+5V[BACKUP]

FROM/TO Y/C/A/H.AMP
V.SYNC
H.SW
DOC_XO_CTL
REC/EE/PB
SD_VIDEO
SP/LP/EP-H
TRICK_PB-H/EE-H
ENV_DET
VCR_A_MUTE
CTL+
CTL-
C_ROTARY
DUMMY_V.SYNC
V.REC_ST_H
H.AMP_SW1
COMP
INPUT_SEL

FROM/TO CHROMA/IF
HD
VD
AFT_M
SCL
SDA
OSD_R
OSD_G
OSD_B
OSD_BLK
DEGAUSS_H
POWER_FAIL[DC]
VCR_POWER_H
IIC_OFF
TV_POWER_H
X_RAY_TEST

FROM/TO I/O
VCR_A_MUTE
TV_POWER_H
REC_LED
T-REC_LED
EXT_MUTE
KEY_A
KEY_B
REMOCON_IN

FROM/TO SOUND AMP
SDA
SCL
TV_POWER_H
TV_A_MUTE

FROM/TO HIFI
V.REC_ST_H
HIFI_ENV
HIFI_H.SW
SCL
SDA
ST_SELECT
VCR_A_MUTE
INPUT_SEL

PCB010
VMX188

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK。

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR. THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

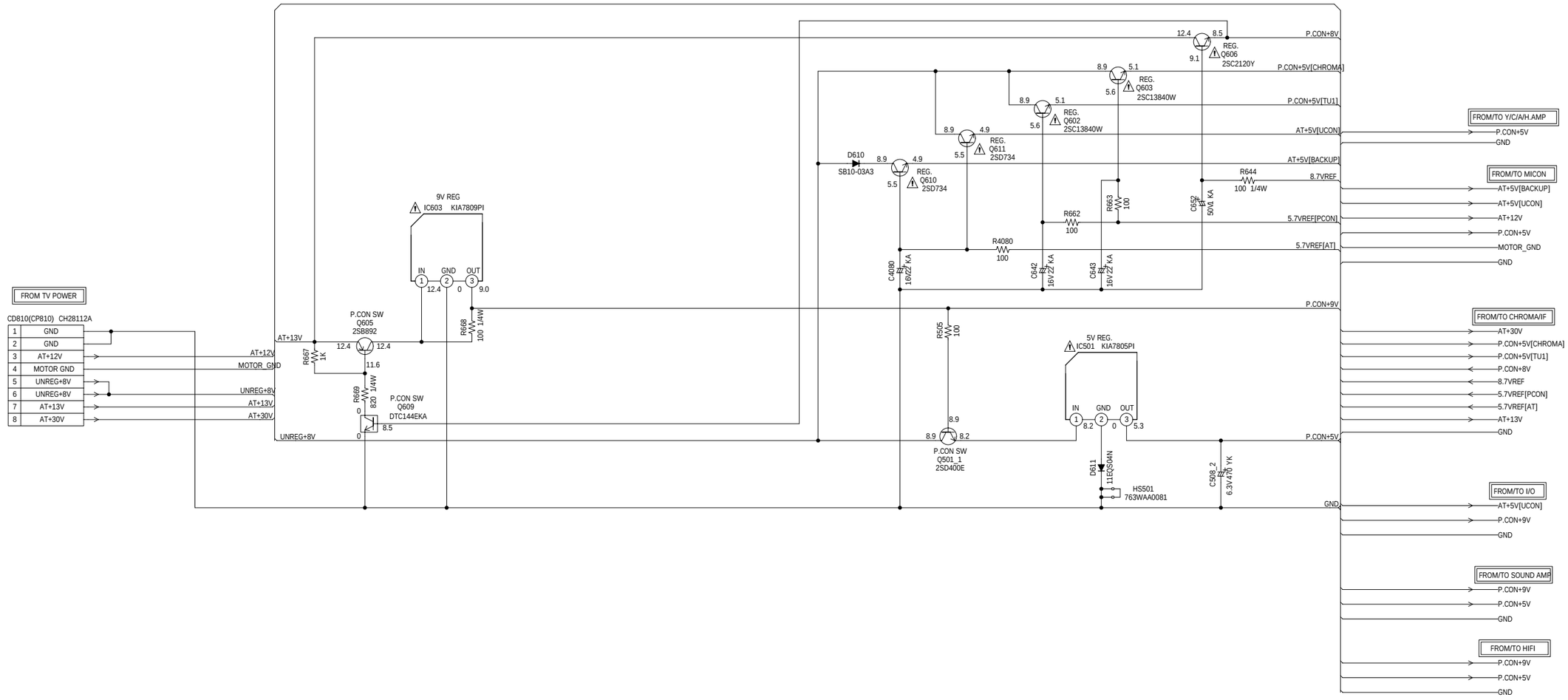
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

CAUTION: DIGITAL TRANSISTOR

R.SIGNAL
G.SIGNAL
B.SIGNAL
DEFLECTION SIGNAL
TUNER VIDEO SIGNAL
CAPSTAN AFC SIGNAL
CYLINDER AFC SIGNAL
CYLINDER APC SIGNAL

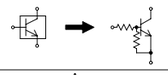
POWER SCHEMATIC DIAGRAM

(SYSCON PCB)



PCB010
VMX188

CAUTION: DIGITAL TRANSISTOR



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

IN/OUT SCHEMATIC DIAGRAM

(SYSCON PCB)

FROM/TO OPERATION
CP4202(CD702)
8283_1112_00_000

11	SP OUT R	
10	SOUND OUT R	
9	NC	
8	FRONT A.IN R	
7	GND	
6	SP OUT L	
5	SOUND OUT L	
4	SOUND GND	
3	FRONT AUDIO IN L	
2	GND	
1	FRONT VIDEO IN	

FROM/TO SOUND AMP
SP_OUT_R
SOUND_R+
SP_OUT_L
SOUND_L+
SOUND_GND

C4232 470P CH
C4204 470P CH
R4201 MV 75
FRONT_AUDIO_IN_R
FRONT_AUDIO_IN_L
FRONT_VIDEO_IN

TO PLATE DECK SHIELD
CC4201 CC4202

FROM/TO OPERATION
CP4201_1(CD757)
8283_1012_00_000

10	NC	
9	KEY B	
8	REC LED	
7	T-REC LED	
6	KEY A	
5	NC	
4	POWER ON L	
3	AT+5V	
2	GND	
1	REMOCON OUT	

REC LED SW Q4205 DTC114EKA
T-REC LED SW Q4206 DTC114EKA
TV POWER LED SW Q4204 DTC114EKA
C4201 0.1 F
C4205 0.1 F
W871
W864
D4203 MTZJ6.8B
KEY_B
REC_LED
T-REC_LED
KEY_A
TV_POWER_H
AT+5V[UCON]
REMOCON_IN

FROM/TO MICON
VCR_A_MUTE
REC_LED
T-REC_LED
KEY_A
KEY_B
REMOCON_IN
TV_POWER_H
EXT_MUTE

FROM/TO Y/C/A/H.AMP
VIDEO_OUT
FRONT_VIDEO_IN
REAR_VIDEO_IN
GND

FROM/TO HIFI
FRONT_AUDIO_IN_L
FRONT_AUDIO_IN_R
REAR_AUDIO_IN_L
REAR_AUDIO_IN_R
AUDIO_OUT_R
AUDIO_OUT_L
W892

R4212 1K 1/4W
C4216 0.1 B
VCR_A_MUTE
R4205 1K
C4208 0.1 B
C4212 16V10 KA
REAR_AUDIO_IN_L
R4217 1K
C4206 16V10 KA
REAR_VIDEO_IN
S825Y
S825X
R4233 100
REAR_AUDIO_IN_R
W912
W914
W906
24
25
D4204 1SS133
R4231 MV 2.2K 1/4W
R4203 2.2K
MUTE SW Q4203 2SC2412K
CH MUTE Q4211 2SC2412K
C4207 25V4.7 KA
C4245 50V4.7 KA
C4210 470P CH
REAR A/V JACK(STEREO) J4201_1 AV3-19S-1
REAR A/V JACK(STEREO) J4202_1 AV3-19-1
R4224 MV 75
C4213 470P CH
C4209 470P CH
C4214 470P CH
V.OUT TP4201
R4213 75
C4211 16V470 YK
D4206 MTZJ13B
R4239 220 1/2W
BUFFER Q4212 2SA1037AK
R4238 33
VIDEO_OUT
L4205 2012 100uH
R4232 10K
D4201 MTZJ5.6B
MUTE SW Q4210 2SA1037AK
R4204 1K
EXT_MUTE
C4220 16V100 YK
P.CON+9V

FROM/TO CHASSIS
CD4203 CH01812A

1	GND	(JACK)

FROM/TO POWER
AT+5V[UCON]
P.CON+9V
GND

PCB010
VMX188

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK。

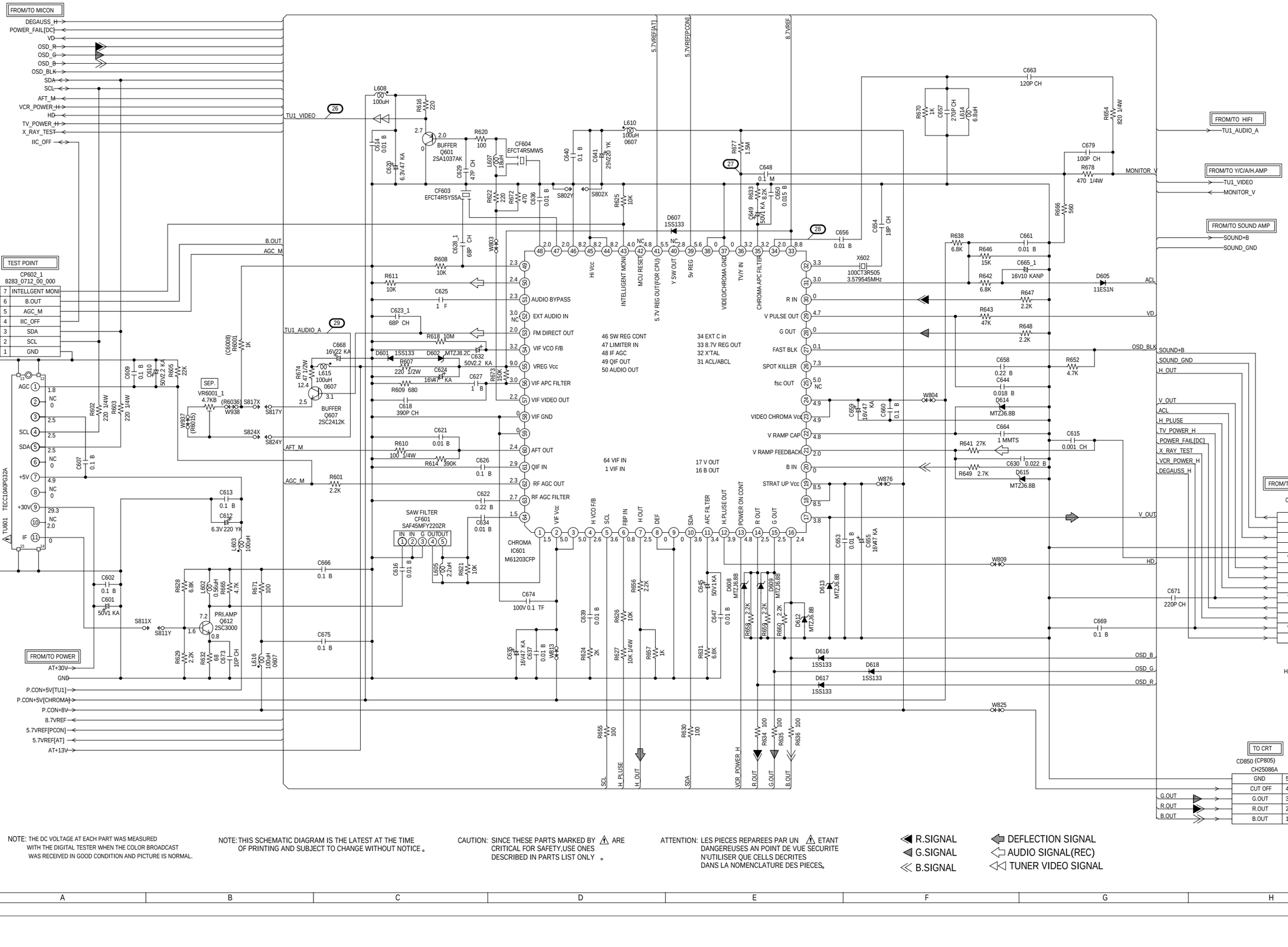
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

CAUTION: DIGITAL TRANSISTOR

TUNER VIDEO SIGNAL
AUDIO SIGNAL(REC)

CHROMA/IF SCHEMATIC DIAGRAM

(SYSCON PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

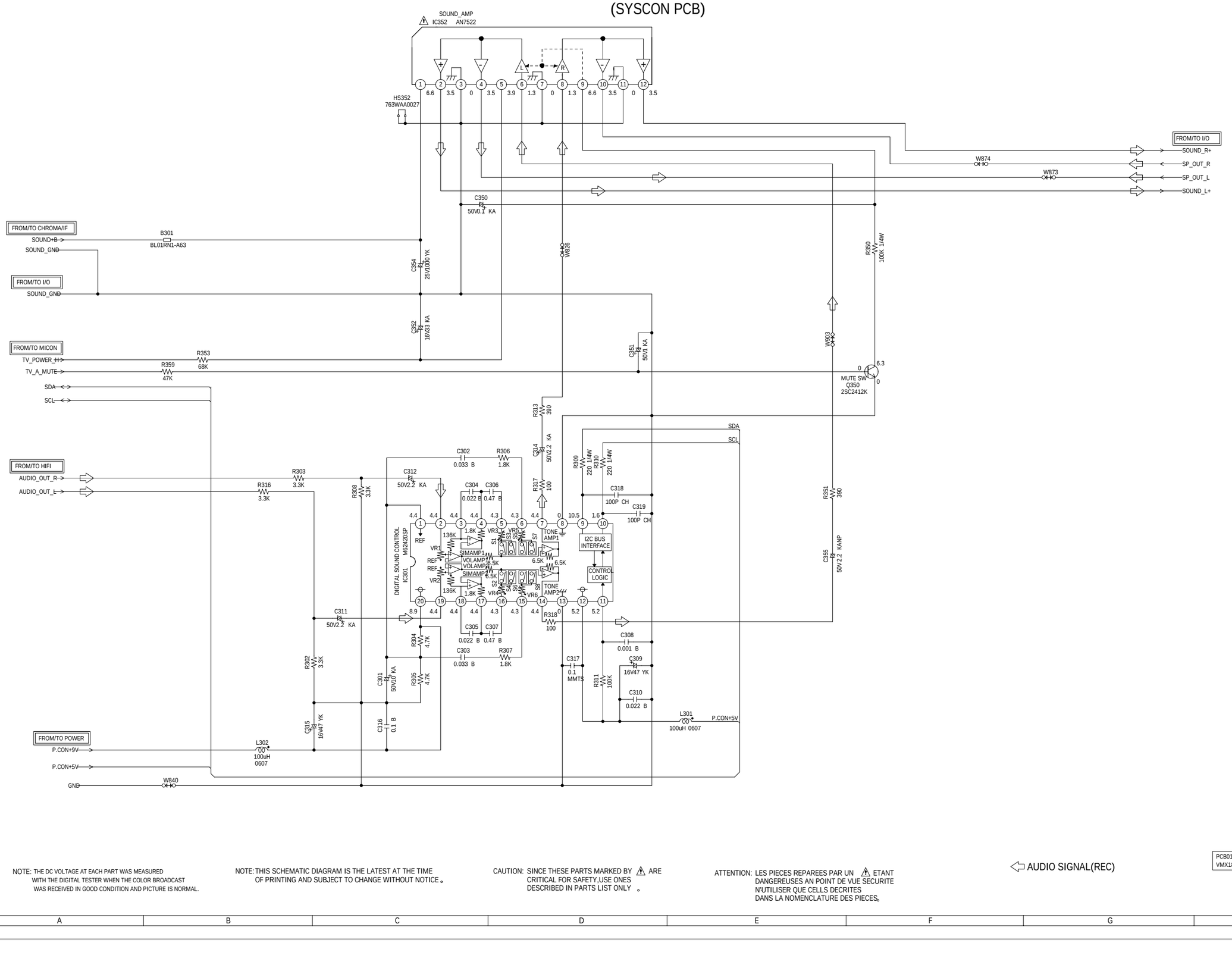
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

SOUND AMP SCHEMATIC DIAGRAM

(SYSCON PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

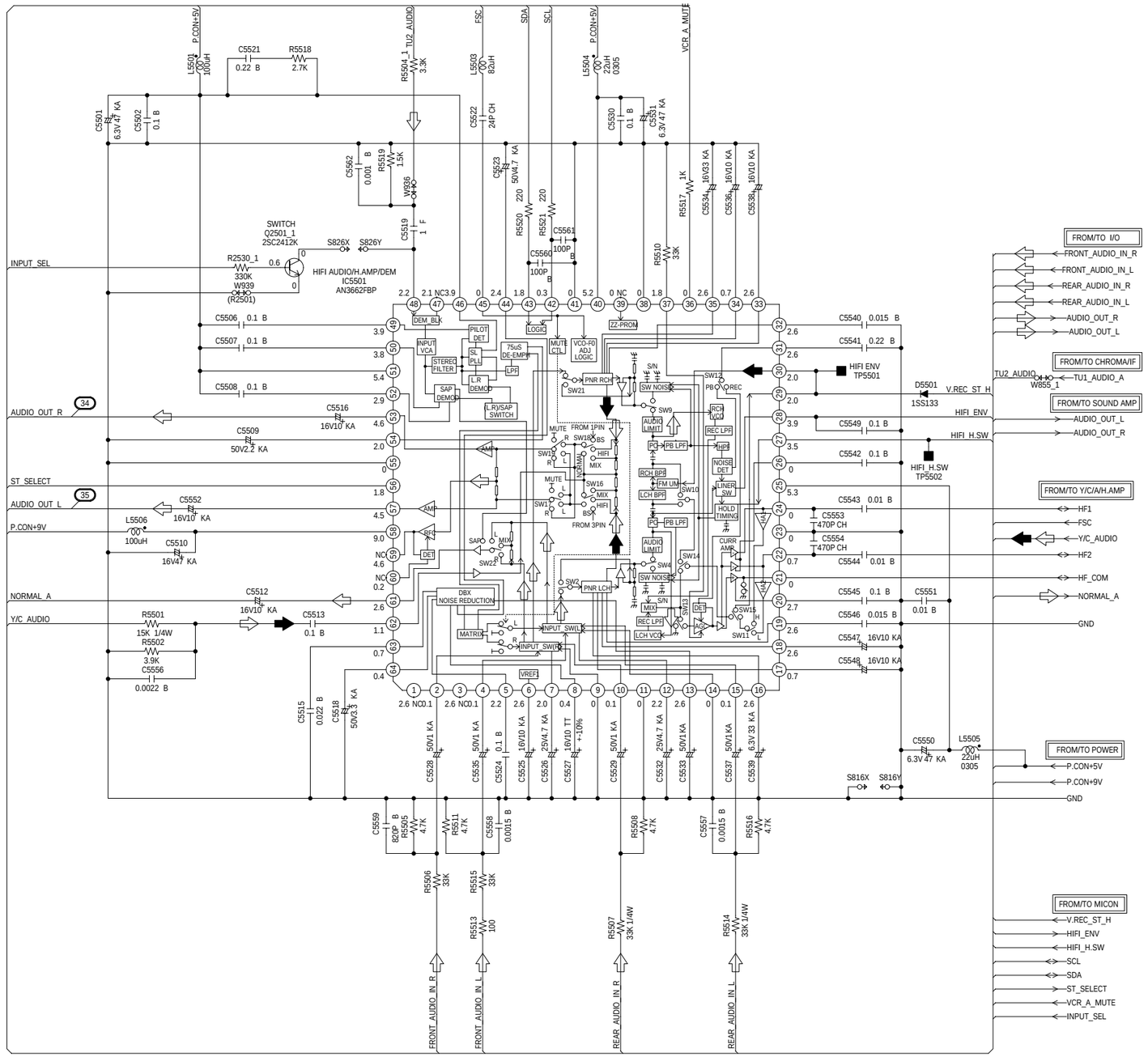
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

AUDIO SIGNAL(REC)

PCB010
VMX188

HIFI SCHEMATIC DIAGRAM

(SYSCON PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK。

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

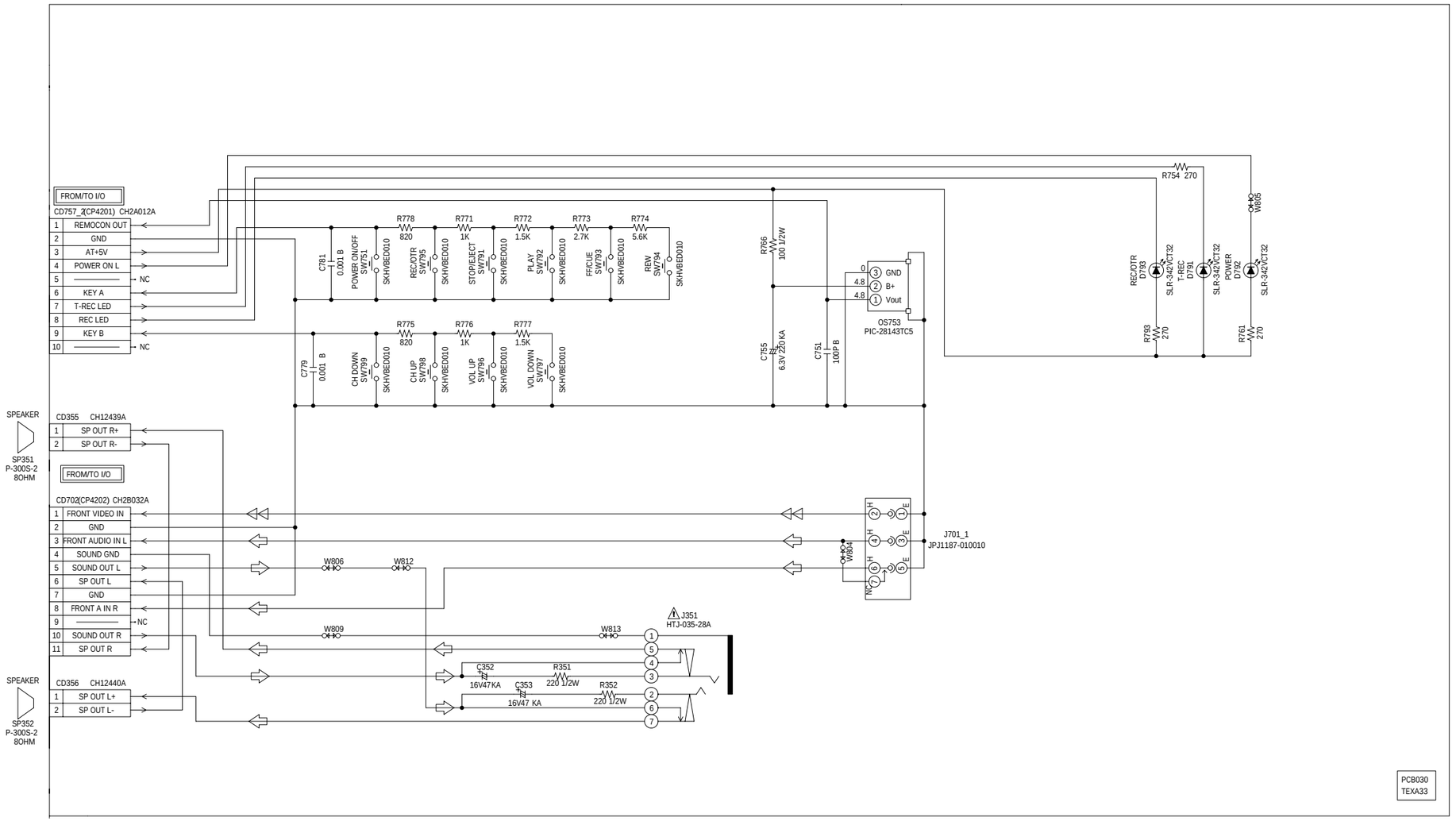
AUDIO SIGNAL(REC)

AUDIO SIGNAL(PB)

PCB010
VMX188

OPERATION SCHEMATIC DIAAGRAM

(OPERATION PCB)



TUNER VIDEO SIGNAL

AUDIO SIGNAL

NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR.
THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

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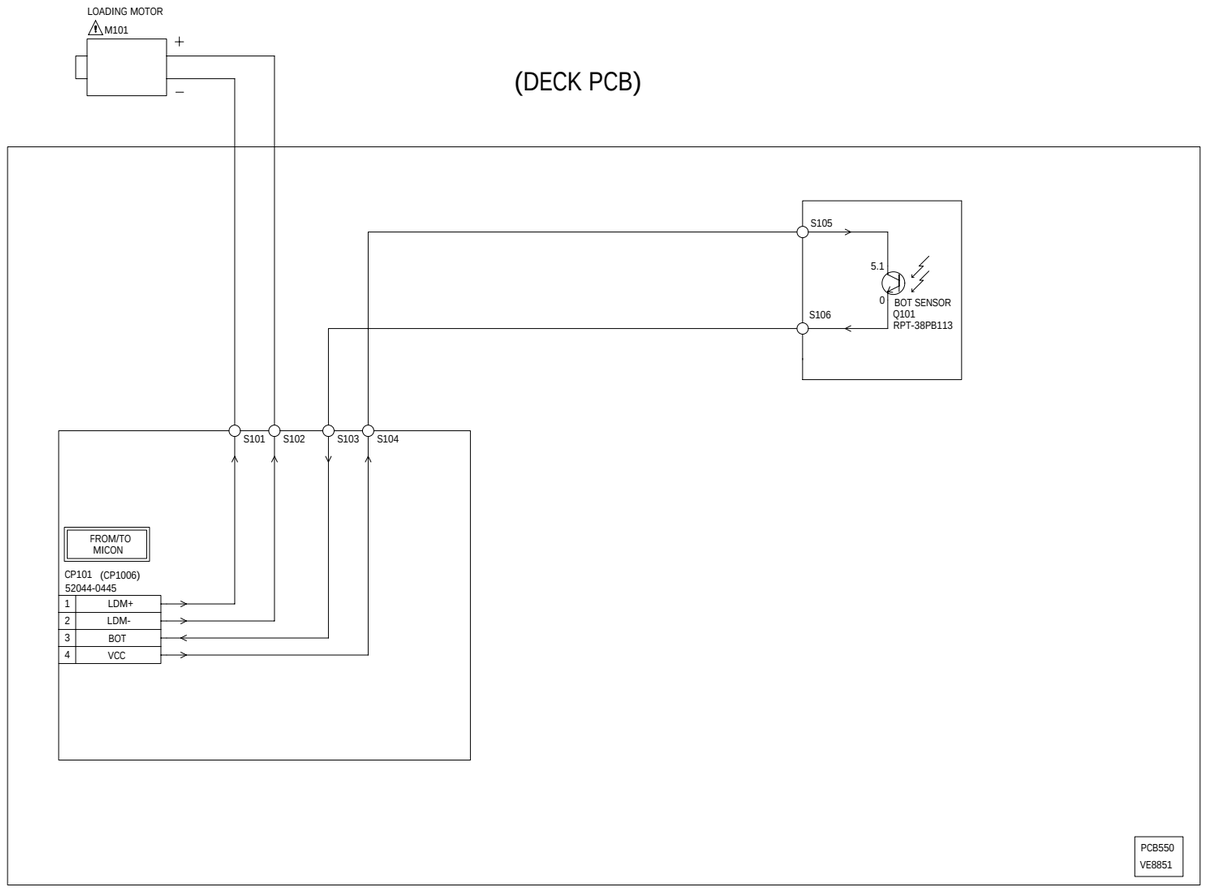
DECK SCHEMATIC DIAGRAM



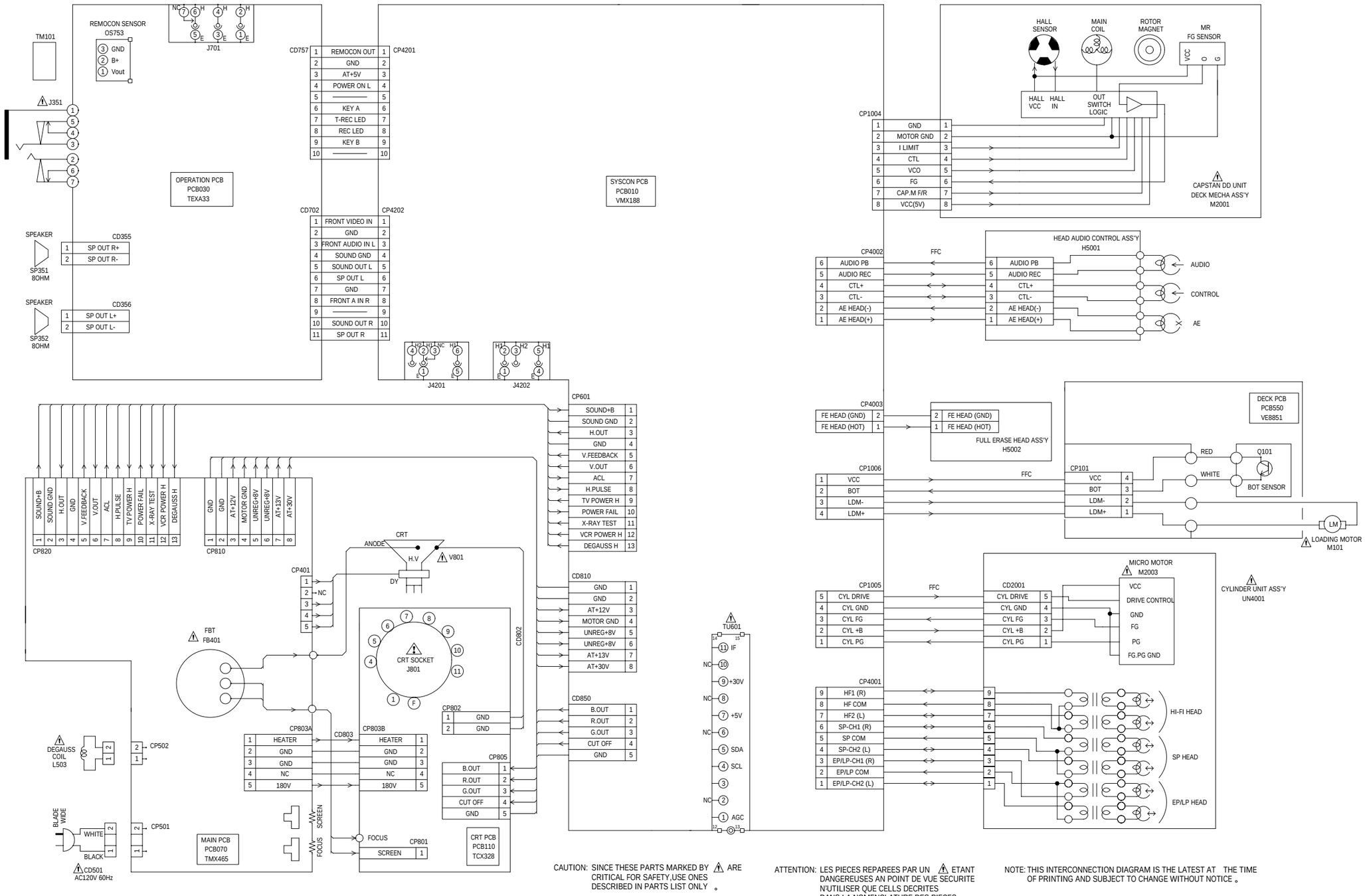
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK。

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

INTERCONNECTION DIAGRAM



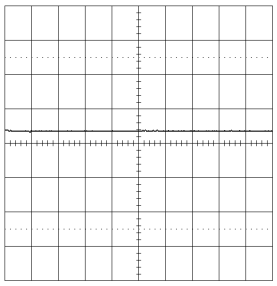
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

NOTE: THIS INTERCONNECTION DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

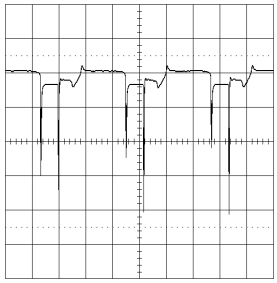
WAVEFORMS

TV POWER

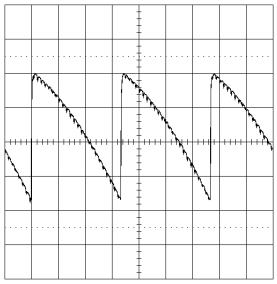


① 5V 0.1ms/div

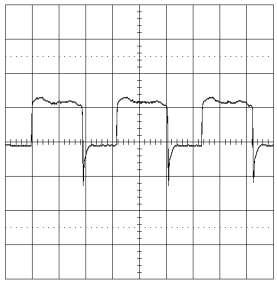
DEFLECTION



② 5V 20µs/div

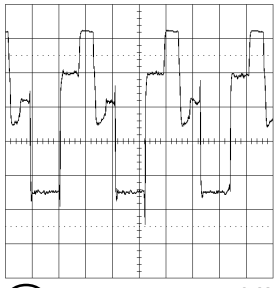


③ 0.5V 5ms/div

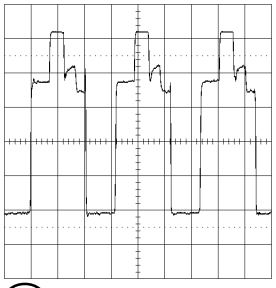


④ 0.5V 20µs/div

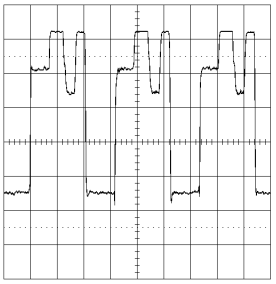
CRT



⑤ 20.0V 20µs/div

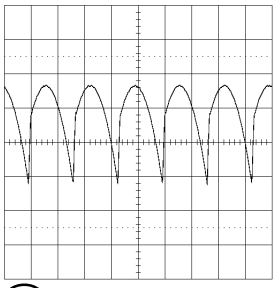


⑥ 20.0V 20µs/div



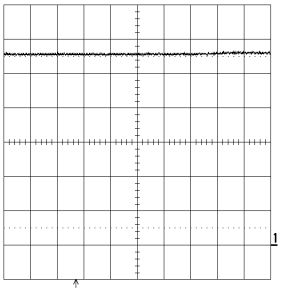
⑦ 20.0V 20µs/div

DEFLECTION

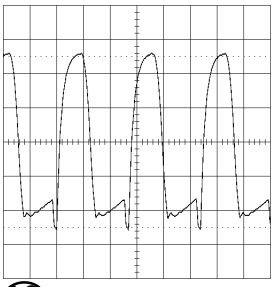


⑧ 1V 10ms/div

TV POWER

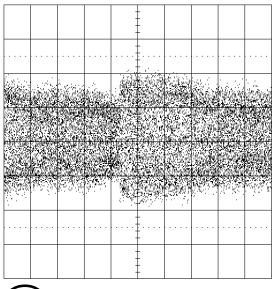


⑨ 20V 1ms/div

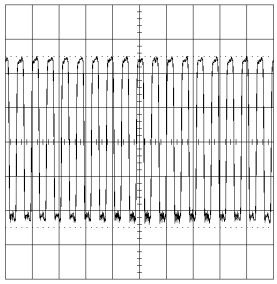


⑩ 0.5V 5µs/div

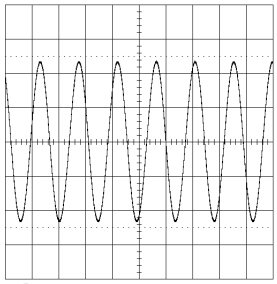
Y/C/AUDIO/HEAD AMP



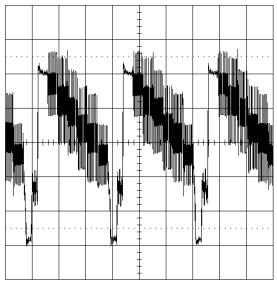
⑪ PB
100mV 5ms/div



⑫ REC/PB
100mV 0.5µs/div

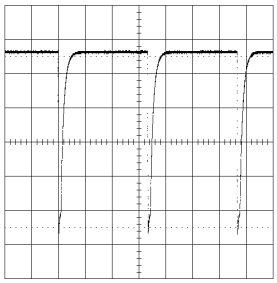


⑬ REC
20V 10µs/div



⑭ REC/PB
0.5V 20µs/div

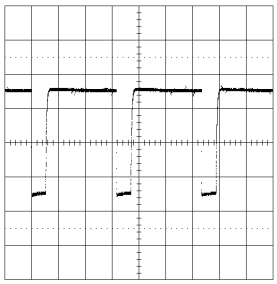
MICON



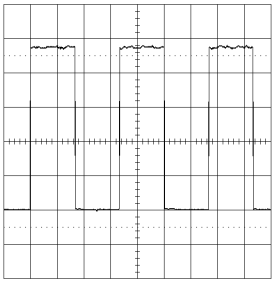
⑮ REC/PB
1V 5ms/div

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

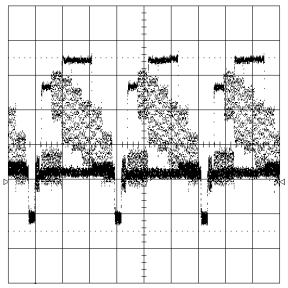


⑯ REC/PB
2V 20µs/div

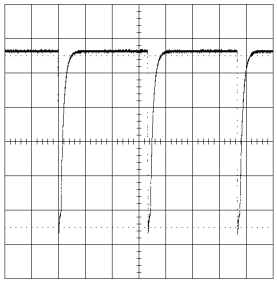


㉑ REC/PB
1V 10ms/div

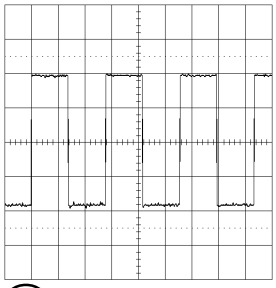
CHROMA/IF



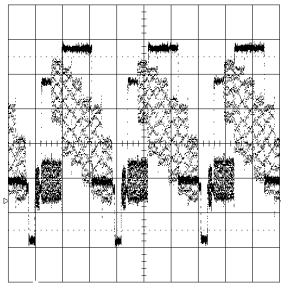
㉖ 200mV 20µs/div



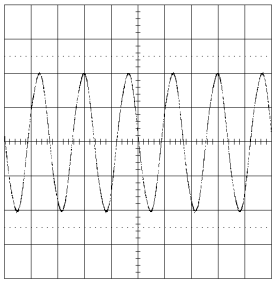
⑰ REC/PB
1V 5ms/div



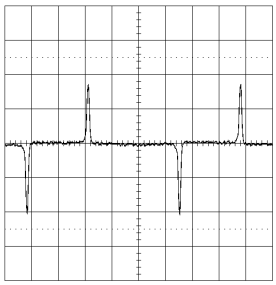
㉒ REC/PB
1V 0.5ms/div



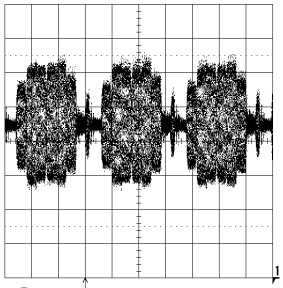
㉗ 200mV 20µs/div



⑱ REC/PB
1V 50ns/div

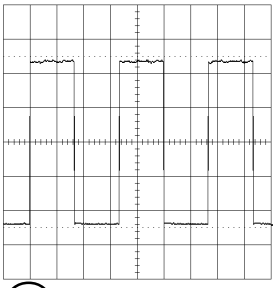


㉓ PB
1V 2ms/div

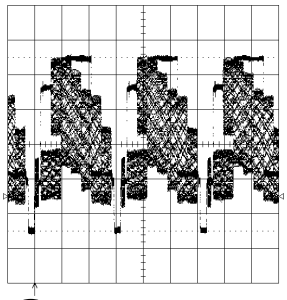


㉘ 200mV 20µs/div

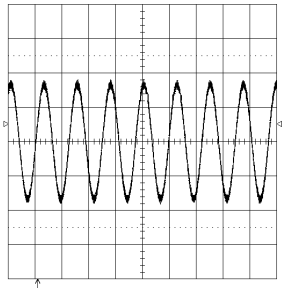
IN/OUT



⑲ REC/PB
1V 10ms/div

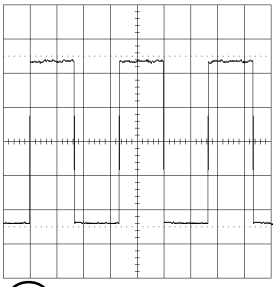


㉔ REC/PB
200mV 20ns/div

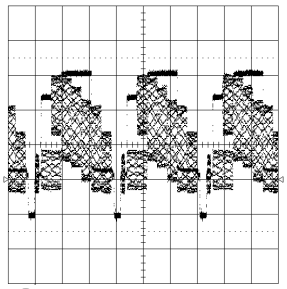


㉙ 200mV 20ms/div

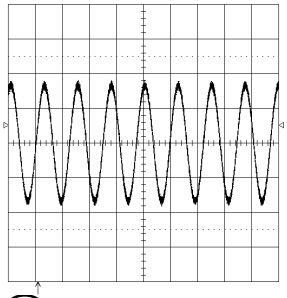
HIFI



⑳ REC/PB
1V 10ms/div



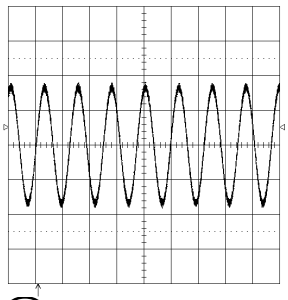
㉕ REC/PB
0.5V 20µs/div



㉞ 200mV 2ms/div

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

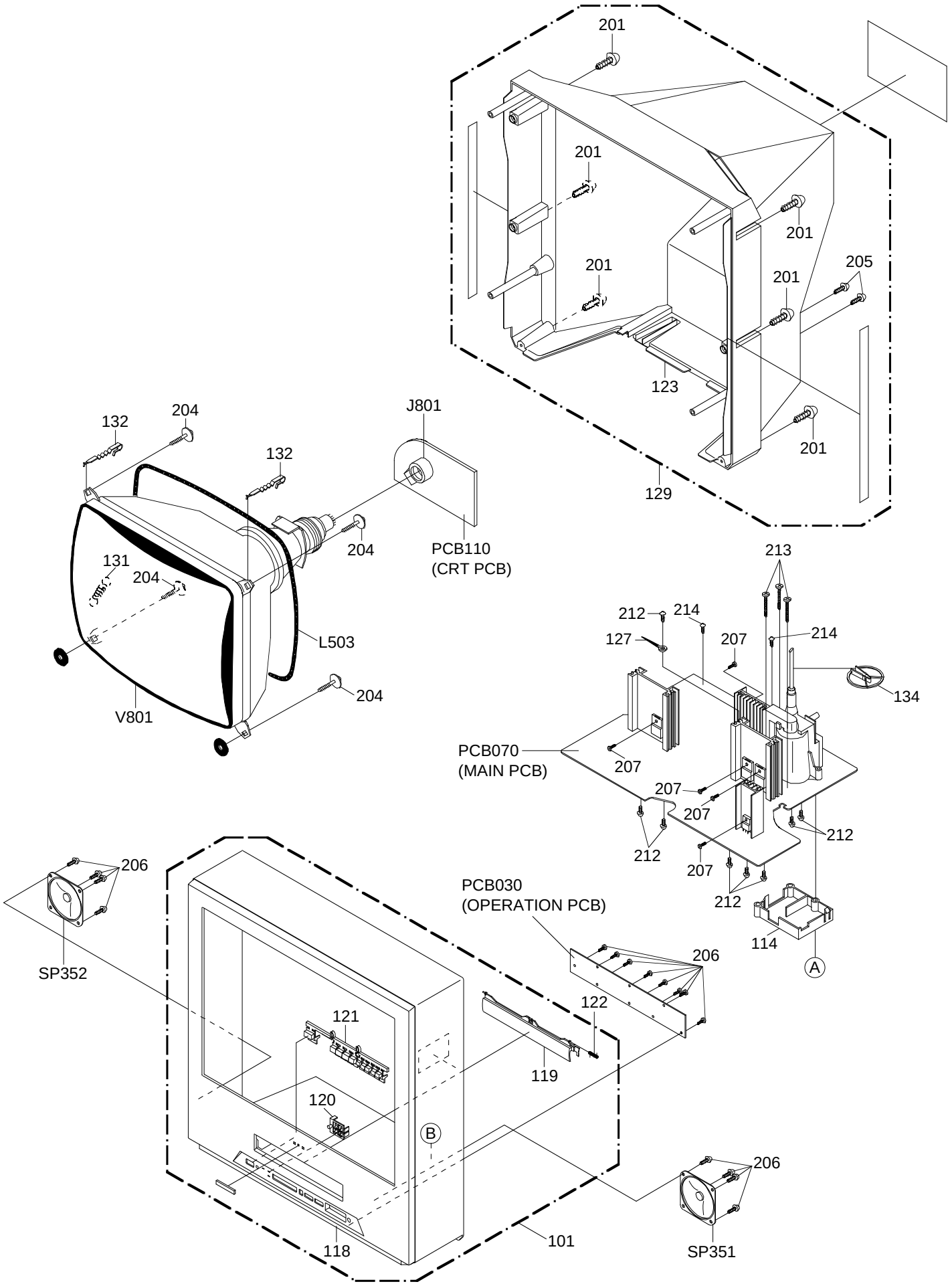
WAVEFORMS



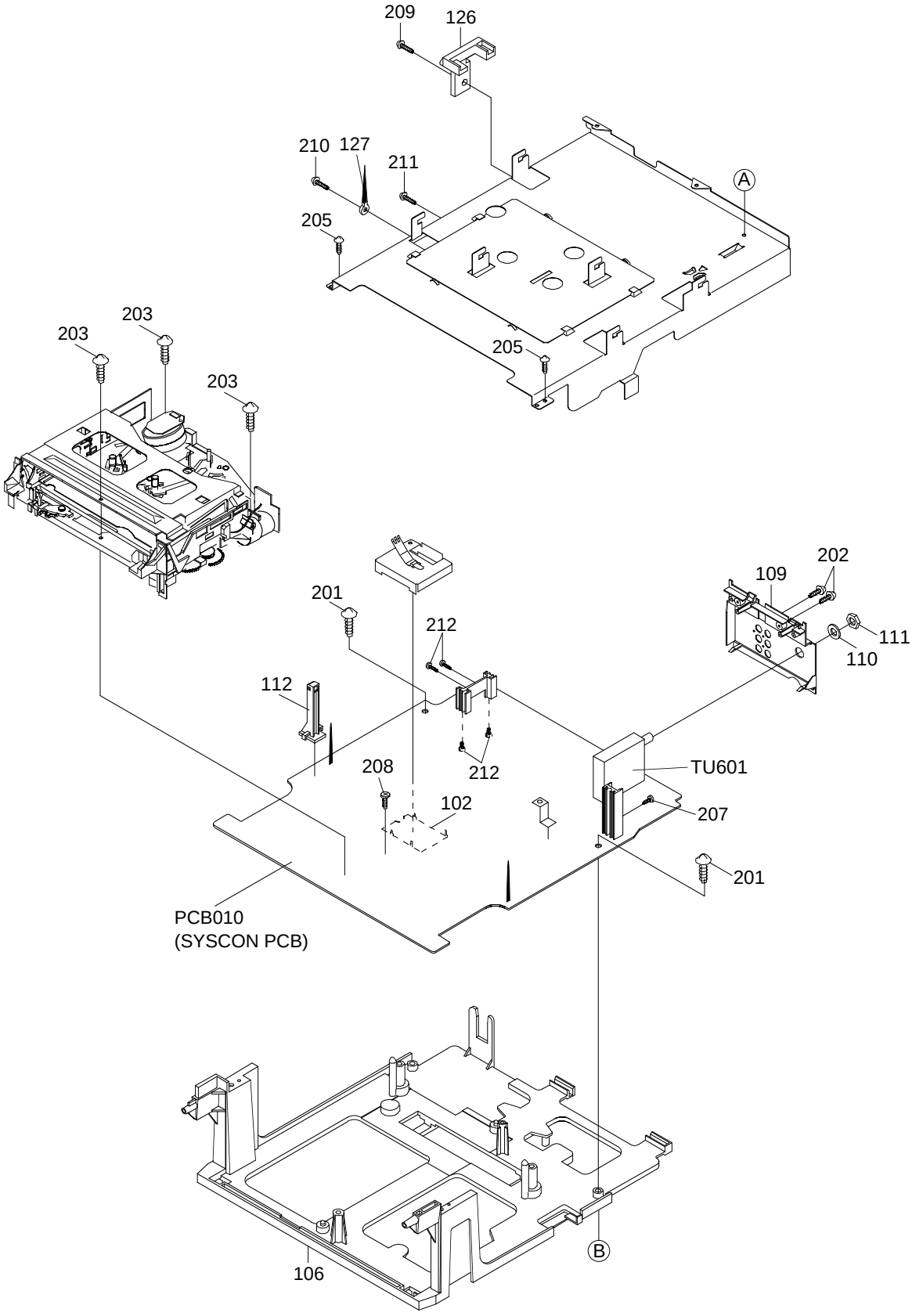
(35) 200mV 2ms/div

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

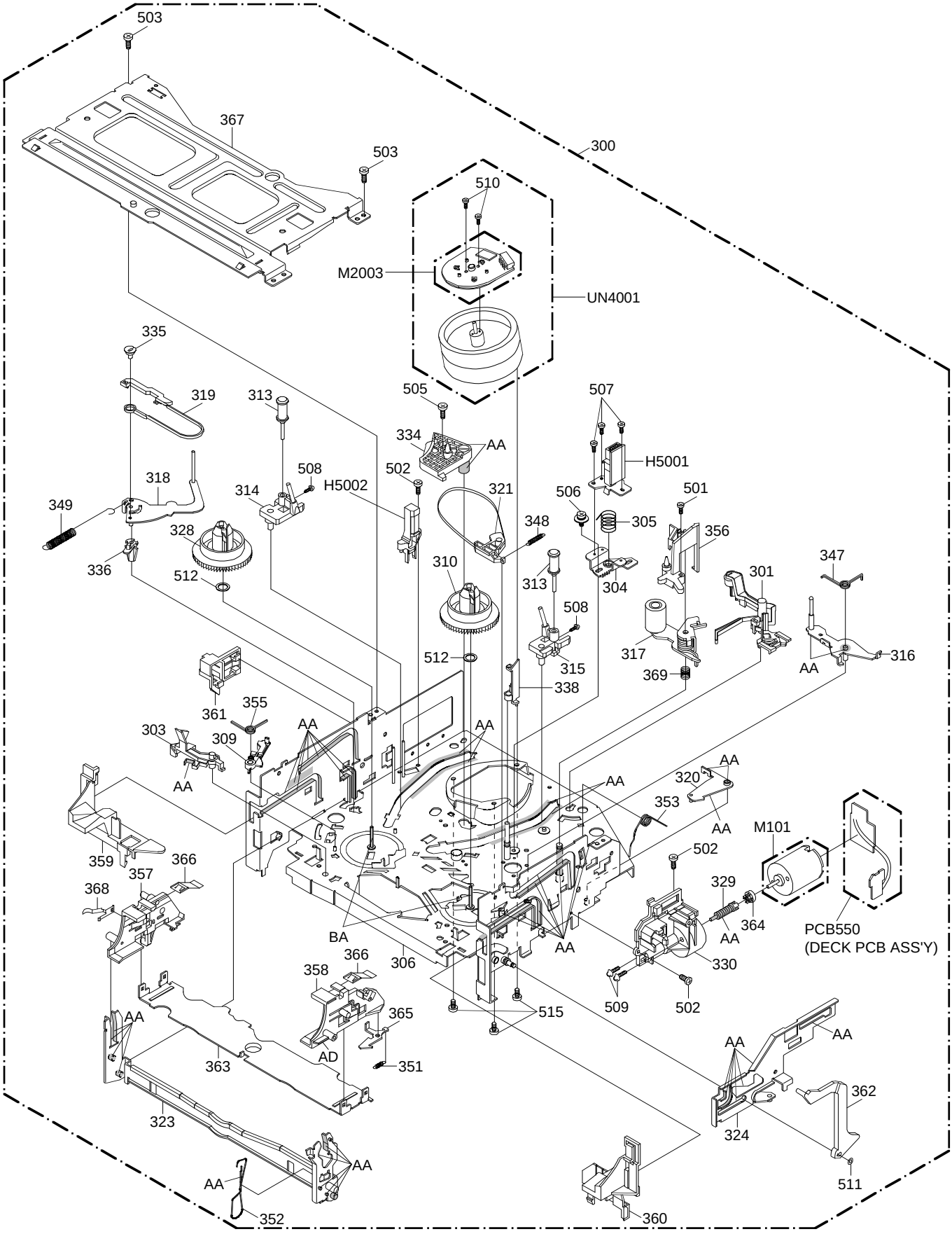
MECHANICAL EXPLODED VIEW



MECHANICAL EXPLODED VIEW



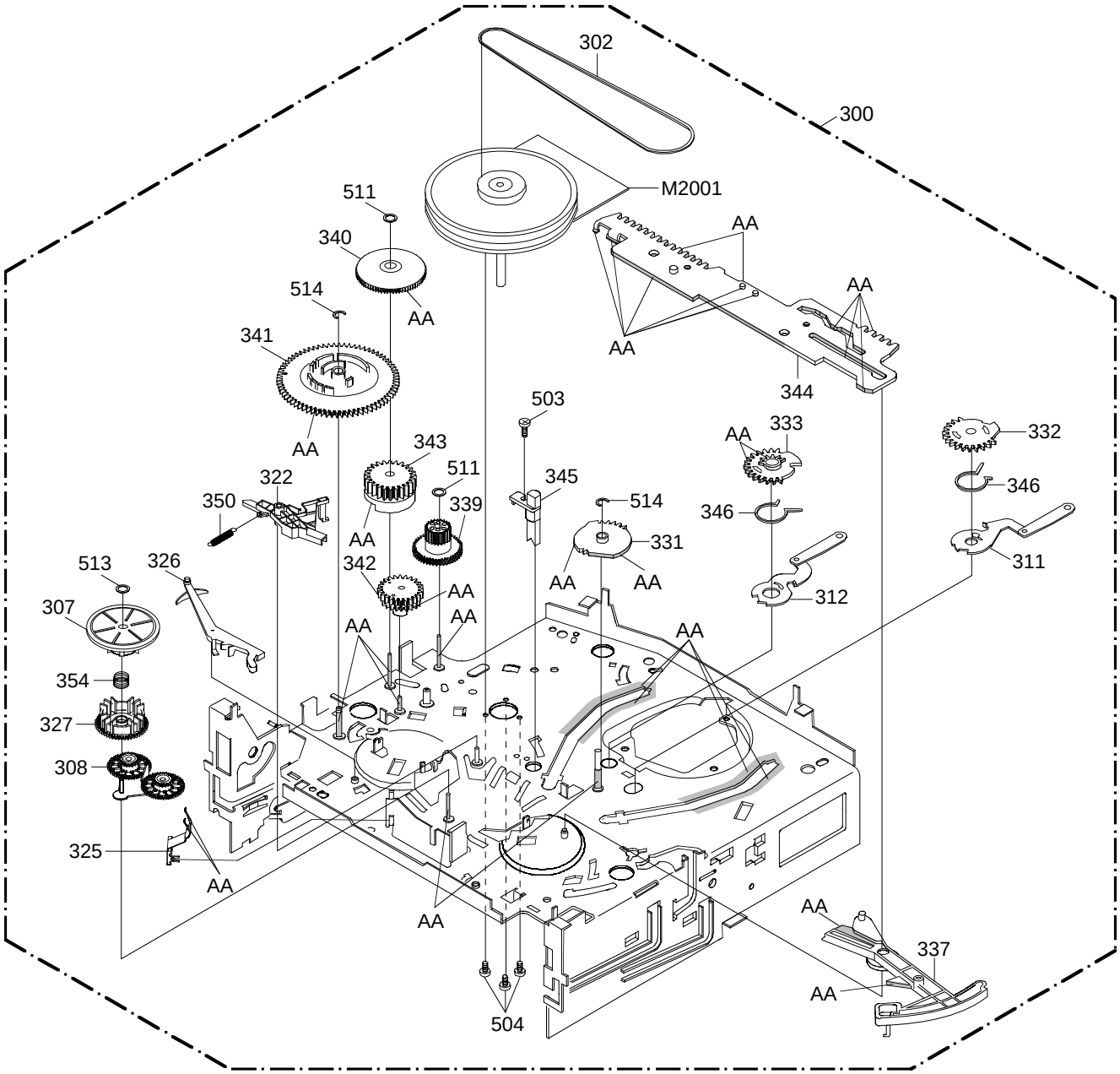
CHASSIS EXPLODED VIEW (TOP VIEW)



CLASS	MARK
GREASE	AA
OIL	BA

NOTE: Applying positions AA and BA for the grease or oil are displayed for this section.
Check if the correct grease or oil is applied for each position.

CHASSIS EXPLODED VIEW (BOTTOM VIEW)



CLASS	MARK
GREASE	AA
OIL	BA

NOTE: Applying positions AA and BA for the grease or oil are displayed for this section.
Check if the correct grease or oil is applied for each position.

MECHANICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
101	BZ610079	A57201B720	CABINET,FRONT ASS'Y	
102	BZ710270	753WSA0130	SHIELD,COVER HEAD AMP	
106	BZ710249	761WPA0198	HOLDER,DECK	
109	BZ710250	771WPA0256	PLATE,JACK	
110	BZ710037	82A97A4077	WASHER	9.7x14xT0.7
111	BZ710038	8300495207	NUT (VOLUME NUT 3/8 INCH)	
112	BZ710178	85OP700036	HOLDER,EOT SENSOR	
114	BZ710011	761WPA0145	HOLDER,FBT	
118	BZ710253	701WPJ0954	CABINET,FRONT	
119	BZ710254	712WPJ0706	FLAP	
120	BZ710255	713WPA0122	GLASS,LED	
121	BZ710256	735WPB0064	BUTTON,FRAME	
122	BZ710010	743WKA0032	SPRING,FLAP	
123	BZ710257	702WPA0750	CABINET,BACK	
126	BZ710012	761WPA0151	HOLDER,M/PCB	
127	BZ710039	8995034000	CORD CLIP UL CO.	
129	BZ610080	A57201B740	CABINET,BACK ASS'Y	
131	BZ710258	741WUA0001	SPRING,EARTH	
132	BZ710259	762WPA0011	HOLDER,CRT WIRE	
134	BZ710260	899HV3T000	HOLDER,ANODE WIRE	
201	BZ710036	8117540B04	SCREW,TAPPING(B0) TRUSS	4x20
202	BZ710031	8110630A04	SCREW,TAP TITE(P) BRAZIER	3x10
203	BZ710034	8117140A24	SCREW,TAPPING(B0) PAN	4x12
204	BZ710264	8111J50D04	SCREW,TAPPING(A) GW22	5x40
205	BZ710032	8110630A24	SCREW,TAP TITE(P) BRAZIER	3x12
206	BZ710030	8110630804	SCREW,TAP TITE(P) BRAZIER	3x8
207	BZ710263	8154130804	SCREW,WASHER (B) FAI7	M3x8
208	BZ710028	8110330804	SCREW,TAP TITE(P) FLAT	3x8
209	BZ710018	8107630804	SCREW,TAP TITE(S) BRAZIER	3x8
210	BZ710147	8107630604	SCREW,TAP TITE(S) BRAZIER	3x6
211	BZ710017	8107226604	SCREW,TAP TITE(S) BIND	2.6x6
212	BZ710019	8109630802	SCREW,TAP TITE(B) BRAZIER	3x8
213	BZ710024	810A130B04	SCREW/WASHER(A)	M3x20
214	BZ710021	810A130604	SCREW/WASHER(A)	M3x6
---	BZ710265	792WHA0277	PACKAGE,TOP	
---	BZ710266	792WHA0278	PACKAGE,BOTTOM	
---	BZ710267	793WCD1258	GIFT BOX	
---	BZ710268	J5720101	INSTRUCTION BOOK	

CHASSIS REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
300	BZ610081	A57201B420A	DECK ASSY	A57201B420A
301	BZ710073	85OA500022	AHC ASS'Y	
302	BZ710193	85OP200290	BELT,CAPSTAN (S)	
303	BZ710132	85OP900710	LEVER,REC	
304	BZ710094	85OP500083	BASE,AC HEAD	
305	BZ710112	85OP800324	SPRING,AC HEAD	
306	BZ710194	85OA000367	MAIN CHASSIS ASS'Y (S-Z)	
307	BZ710195	85OA200082	CLUTCH ASS'Y(S2)	
308	BZ710196	85OA200080	ARM,IDLER ASS'Y (S)	
309	BZ710197	85OP600556	ARM,SS BRAKE (S)	
310	BZ710198	85OP200292	REEL,T (S)	
311	BZ710063	85OA300061	LOADING ARM S ASS'Y	
312	BZ710064	85OA300062	LOADING ARM T ASS'Y	
313	BZ614076	85OA400210	GUIDE ROLLER ASS'Y	
314	BZ710069	85OA400188	BASE,INCL S ASS'Y	
315	BZ710070	85OA400196	BASE,INCL T(S) ASS'Y	
316	BZ710200	85OA400199	P5-3 ARM ASS'Y(S)	
317	BZ710072	85OA400205	PINCH ROLLER BLOCK	
318	BZ710065	85OA400175	TENSION ARM ASS'Y	
319	BZ710201	85OA400184	TENSION BAND ASS'Y (S)	
320	BZ710067	85OA400178	PINCH ROLLER LEVER ASS'Y	
321	BZ710202	85OA600188	BRAKE T ASS'Y (S)	
322	BZ710203	85OA600191	CAP BRAKE ASS'Y(S)	
323	BZ710076	85OA900213	LINK ASS'Y	
324	BZ710077	85OA900216	LINK LEVER ASS'Y	
325	BZ710204	85OP200284	LEVER,CLUTCH (S)	
326	BZ710205	85OP200285	ACTUATOR,CLUTCH	
327	BZ710206	85OP200298	GEAR,COUPLING(S2)	
328	BZ710207	85OP200291	REEL,S (S)	
329	BZ710096	85OP600541	WORM	
330	BZ710105	85OP600563	BRACKET,MOTOR	
331	BZ710086	85OP300178	GEAR,MAIN LOADING	
332	BZ710087	85OP300179	GEAR,LOADING S	
333	BZ710088	85OP300180	GEAR,LOADING T	
334	BZ710208	85OP300187	HOLDER,LOADING GEAR (S-Z)	
335	BZ710090	85OP400472	ADJUST,TENSION	
336	BZ710093	85OP400492	HOLDER,TENSION	
337	BZ710092	85OP400490	LEVER,TENSION	
338	BZ710091	85OP400475	COVER,P4	
339	BZ710097	85OP600543	GEAR,JOINT	
340	BZ710098	85OP600544	GEAR,MIDDLE	
341	BZ710209	85OP600554	CAM,MAIN (S)	
342	BZ710101	85OP600546	CAM,P5	
343	BZ710172	85OP600565	CAM,PINCH ROLLER	
344	BZ710210	85OP600561	ROD,MAIN(S)	
345	BZ710106	85OP700035	REFLECTOR,LED	
346	BZ710107	85OP800318	SPRING,LOADING GEAR	
347	BZ710211	85OP800334	SPRING,P5 (S)	
348	BZ710212	85OP800335	SPRING,BRAKE T (S)	
349	BZ710110	85OP800322	SPRING,TENSION	
350	BZ710213	85OP800336	SPRING,CAP BRAKE (S)	
351	BZ710118	85OP800342	SPRING,LOCKER (S)	
352	BZ710113	85OP800326	SPRING,LINK	
353	BZ710114	85OP800328	SPRING,DAMPER	
354	BZ710115	85OP800330	SPRING,RING	
355	BZ710214	85OP800337	SPRING,SS BRAKE (S)	
356	BZ710119	85OP900680	OPENER,CASS	
357	BZ710215	85OP900704	CASS SIDE L	
358	BZ710121	85OP900684	CASS SIDE R	
359	BZ710131	85OP900709	TAPE GUIDE L (P,R)	
360	BZ710122	85OP900686	TAPE GUIDE R	
361	BZ710216	85OP900714	COVER,SENSOR L3	
362	BZ710123	85OP900688	LEVER,FLAP	
363	BZ710124	85OP900690	CASS HOLDER	
364	BZ710095	85OP600540	DRIVER,WORM	
365	BZ710217	85OP900713	LOCKER,R2	
366	BZ710127	85OP900694	SPRING,PACK	
367	BZ710128	85OP900695	BRACKET,TOP	
368	BZ710129	85OP900696	SPRING,CASS EARTH	
369	BZ710117	85OP800341	SPRING,P/R ARM	

CHASSIS REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
501	BZ710048	8107126A04	SCREW,TAP TITE(S) PAN	2.6x10
502	BZ710049	8107226804	SCREW,TAP TITE(S) BIND	2.6x8
503	BZ710017	8107226604	SCREW,TAP TITE(S) BIND	2.6x6
504	BZ710050	8109126604	SCREW,TAP TITE(B) PAN	2.6x6
505	BZ710052	810A126804	SCREW/WASHER(A)	M2.6x8
506	BZ710053	810B126404	SCREW/WASHER(B)	M2.6x4
507	BZ710046	8102120604	SCREW,PAN	M2x6
508	BZ710045	8102120304	SCREW,PAN	M2x3
509	BZ710047	8102130304	SCREW,PAN	M3.0x3.0
510	BZ710051	810A123504	SEMS A	M2.3x5.0
511	BZ710055	82P266005N	POLYSLIDER WASHER(CUT)	2.6x6.0xT0.5
512	BZ710218	82Q2647C5N	POLYSLIDER WASHER	2.6x4.7xT0.25
513	BZ710054	82P184505N	POLYSLIDER WASHER(CUT)	1.8x4.5xT0.5
514	BZ710058	83ETW30000	E-RING	3.0
515	BZ710219	810A126504	SCREW/WASHER(A)	M2.6x5
CP101	BZ614040	069R740018	CONNECTOR PCB SIDE	52044-0445
H5001	BZ710040	1523D91034	HEAD (AUDIO CONTROL)	HVMXA1072A
H5002	BZ710041	1543D02013	HEAD (FULL ERASE)	HVFHP0032A
⚠ M101	BZ710044	1596P78001	MOTOR (LOADING)	MXN13FB11H
⚠ M2001	BZ710141	1510398030	CAPSTAN DD UNIT	F2QSB02
M2003	BZ710042	1589V11007	MICRO MOTOR	EP14BD
PCB550	BZ610053	A4C831B550	DECK PCB ASS'Y	VE8851
Q101	BZ410026	0000700320	TRANSISTOR,PHOTO	RPT-38PB113
⚠ UN4001	BZ610082	A57201B500	CYLINDER UNIT ASSY	A57201B500

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
			RESISTORS	
R402	BZ210051	R3X18AR47J	R,METAL OXIDE	0.47 OHM 2W
⚠ R415	BZ210052	R002T21R8J	RC	1.8 OHM 1/2W
⚠ R418	BZ210053	R002T22R2J	RC	2.2 OHM 1/2W
⚠ R436	BZ210054	R65582120J	R,FUSE	12 OHM 1/2W
⚠ R437	BZ210039	R3X181010J	R,METAL OXIDE	1 OHM 1W
⚠ R439	BZ210015	R4X5T4223F	R,METAL	22K OHM 1/4W
⚠ R441	BZ210013	R4X5T4104F	R,METAL	100K OHM 1/4W
⚠ R442	BZ210030	R4X5T4472F	R,METAL	4.7K OHM 1/4W
⚠ R443	BZ210055	R4X5T4222F	R,METAL	2.2K OHM 1/4W
⚠ R444	BZ210056	R4X5T4123F	R,METAL	12K OHM 1/4W
⚠ R447	BZ210021	R65582680J	R,FUSE	68 OHM 1/2W
⚠ R448	BZ210003	R3K181102J	R,METAL	1K OHM 1W
⚠ R449	BZ210057	R5X2CE272J	R,CEMENT	2.7K OHM 7W
⚠ R450	BZ210058	R3X181R68J	R,METAL OXIDE	0.68 OHM 1W
⚠ R452	BZ210059	R3X1812R2J	R,METAL OXIDE	2.2 OHM 1W
⚠ R500	BZ210001	R21202275K	R,SOLID	2.7M OHM 1/2W
⚠ R501	BZ210017	R5X2CE2R2J	R,CEMENT	2.2 OHM 7W
⚠ R503	BZ210060	R002T4332J	RC	3.3K OHM 1/4W
⚠ R512	BZ210061	R3X28A103J	R,METAL OXIDE	10K OHM 2W
⚠ R528	BZ210062	R3X28B223J	R,METAL	22K OHM 3W
⚠ R529	BZ210084	R4X5T4272F	R,METAL	2.7K OHM 1/4W
⚠ R542	BZ210063	R3X181R22J	R,METAL	0.22 OHM 1W
⚠ R543	BZ210064	R63584681J	R,FUSE	680 OHM 1/4W
⚠ R544	BZ210048	R3X181R33J	R,METAL	0.33 OHM 1W
⚠ R804	BZ210050	R3X18A123J	R,METAL OXIDE	12K OHM 2W
⚠ R806	BZ210050	R3X18A123J	R,METAL OXIDE	12K OHM 2W
⚠ R808	BZ210050	R3X18A123J	R,METAL OXIDE	12K OHM 2W
R1005	BZ210020	R615J12R7J	R,FUSE	2.7 OHM 1W
R2530	BZ210100	R002T4334J	RC	330K OHM 1/4W
R5520	BZ210066	R00106221J	RC	220 OHM 1/6W
R5521	BZ210066	R00106221J	RC	220 OHM 1/6W
			CAPACITORS	
C354	BZ110053	E02LF3102M	CE	1000 UF 25V
⚠ C407	BZ110032	E5EZF3102M	CE	1000 UF 25V
⚠ C413	BZ110054	P3N1F5333J	CPP	0.033 UF 630V
C421	BZ110055	E5EZF4102M	CE	1000 UF 35V
C423	BZ110056	P447F2474J	CMPP	0.47 UF 200V FHS
C427	BZ110057	E53FF56R8K	CE	6.8 UF 50V NP
⚠ C428	BZ110058	P4N8FJ123H	CMPP	0.012 UF 1.25KV
C430	BZ110002	C01BBP713K	CC	0.001 UF 2KV BP
⚠ C431	BZ110059	E0ELTD100M	CE	10 UF 250V
⚠ C433	BZ110020	E5EZT8220M	CE	22 UF 100V
C439	BZ110094	C0JTB05G2K	CC	180 PF 500V B
⚠ C443	BZ110060	P4N8FJ222H	CMPP	0.0022UF 1.25KV
C450	BZ110002	C01BBP713K	CC	0.001 UF 2KV BP
⚠ C502	BZ110061	C0JTB0513K	CC	0.001 UF 500V B
⚠ C503	BZ110061	C0JTB0513K	CC	0.001 UF 500V B
⚠ C505	BZ110025	P2122B224M	CMP	0.22 UF 250V ECQUL
⚠ C506	BZ110035	P2122B104M	CMP	0.1 UF 250V ECQUL
⚠ C507	BZ110062	E51SFC821M	CE	820 UF 200V
⚠ C510	BZ110063	E5EZT5470M	CE	47 UF 50V
C514	BZ110004	C01BBP7K3K	CC	0.0027UF 2KV BP
C517	BZ110095	C0JLYR7E3K	CC	0.0015UF 2KV YR
⚠ C520	BZ110028	E5EZT2102M	CE	1000 UF 16V
⚠ C521	BZ110064	E62D0C221M	CE	220 UF 200V
C522	BZ110001	C01BBP712K	CC	100 PF 2KV BP
⚠ C523	BZ110065	E5EZT4471M	CE	470 UF 35V
⚠ C524	BZ110032	E5EZF3102M	CE	1000 UF 25V
⚠ C529	BZ110066	C034E0J13M	CC	0.001 UF 125V MX
⚠ C530	BZ110008	C034E0JH3M	CC	0.0022UF 125V MX
⚠ C531	BZ110017	E5EZT3102M	CE	1000 UF 25V
⚠ C537	BZ110067	E02LT5R47M	CE	0.47 UF 50V
C664	BZ110068	P232W0105J	CMPL	1 UF 50V MMTS
C674	BZ110069	P613T1104J	CMPL	0.1 UF 100V TF
C808	BZ110002	C01BBP713K	CC	0.001 UF 2KV BP
C1055	BZ110073	CHG0F0415Z	CC	0.1 UF 50V F
C1056	BZ110074	E50HU5010M	CE	1 UF 50V
C4007	BZ110074	E50HU5010M	CE	1 UF 50V
C4075	BZ110096	E50HU2100M	CE	10 UF 16V
C5559	BZ110097	CHGTB04W2K	CC	820 PF 50V B
C5560	BZ110075	CHG0B0412K	CC	100 PF 50V B
C5561	BZ110075	CHG0B0412K	CC	100 PF 50V B
C5562	BZ110098	CHGTB0413K	CC	0.001 UF 50V B
			DIODES	
D401	BZ410043	D2WT011E10	DIODE,SILICON	11E1-EIC
D403	BZ410019	D97U03001B	DIODE,ZENER	MTZJ30B T-77
D404	BZ410019	D97U03001B	DIODE,ZENER	MTZJ30B T-77

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
			DIODES	
D406	BZ410014	D2LTPG06J0	DIODE,SILICON	RMPG06J-G3
⚠ D407	BZ410051	DCBFMV3FU0	DIODE	FMV-3FULF027-102
⚠ D408	BZ410018	D94TA27011	DIODE,ZENER	HZ27-1L TD
⚠ D409	BZ410017	D94TA11B13	DIODE,ZENER	HZ11B3L TD
D410	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
⚠ D411	BZ410014	D2LTPG06J0	DIODE,SILICON	RMPG06J-G3
⚠ D412	BZ410014	D2LTPG06J0	DIODE,SILICON	RMPG06J-G3
⚠ D413	BZ410014	D2LTPG06J0	DIODE,SILICON	RMPG06J-G3
D414	BZ410014	D2LTPG06J0	DIODE,SILICON	RMPG06J-G3
⚠ D415	BZ410014	D2LTPG06J0	DIODE,SILICON	RMPG06J-G3
⚠ D501	BZ410044	D4LZBL06L0	DIODE	GBL06L-6177
⚠ D503	BZ410028	D2BTRU2AM0	DIODE,SILICON	RU2AM V1
⚠ D505	BZ410052	D28F21DQN9	DIODE,SCHOTTKY	21DQ09N-FC4
D506	BZ410014	D2LTPG06J0	DIODE,SILICON	RMPG06J-G3
D507	BZ410008	D23U1003A3	DIODE,SCHOTTKY	SB10-03A3
⚠ D508	BZ410010	D28T21DQN9	DIODE SCHOTTKY	21DQ09N-TA2B1
⚠ D510	BZ410028	D2BTRU2AM0	DIODE,SILICON	RU2AM V1
⚠ D511	BZ410011	D28TELS2N2	DIODE RECTIFER	10ELS2N-TA1B2
⚠ D512	BZ410010	D28T21DQN9	DIODE SCHOTTKY	21DQ09N-TA2B1
⚠ D514	BZ410010	D28T21DQN9	DIODE SCHOTTKY	21DQ09N-TA2B1
⚠ D515	BZ410037	D97U03301B	DIODE,ZENER	MTZJ33B T-77
D516	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D517	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D518	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
⚠ D519	BZ410010	D28T21DQN9	DIODE SCHOTTKY	21DQ09N-TA2B1
D521	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D523	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D524	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D525	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D526	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D528	BZ410021	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D529	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D530	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D533	BZ410011	D28TELS2N2	DIODE RECTIFER	10ELS2N-TA1B2
⚠ D534	BZ410052	D28F21DQN9	DIODE,SCHOTTKY	21DQ09N-FC4
D601	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D602	BZ410053	D97U08R21C	DIODE,ZENER	MTZJ8.2C T-77
D605	BZ410025	D28T11ESN1	DIODE SILICON	11ES1N-TA1B2
D607	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D608	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D609	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D610	BZ410008	D23U1003A3	DIODE,SCHOTTKY	SB10-03A3
D611	BZ410012	D28TQS04N0	DIODE,SCHOTTKY	11EQS04N-TA1B2
D612	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D613	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D614	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D615	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D616	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D617	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D618	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D791	BZ410054	0021721150	LED	SLR-342VCT32
D792	BZ410054	0021721150	LED	SLR-342VCT32
D793	BZ410054	0021721150	LED	SLR-342VCT32
D801	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D802	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D803	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D1001	BZ410043	D2WT011E10	DIODE,SILICON	11E1-EIC
D1002	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D1003	BZ410004	0010600060	LED	SID1050CM
D1004	BZ410016	D92T1120B0	DIODE,ZENER	RD12FB-T7
D1005	BZ410043	D2WT011E10	DIODE,SILICON	11E1-EIC
D1014	BZ410020	D97U05R11B	DIODE,ZENER	MTZJ5.1B T-77
D4201	BZ410021	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D4203	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D4204	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D4206	BZ410034	D97U01301B	DIODE,ZENER	MTZJ13B T-77
D5501	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
			ICS	
IC301	BZ611034	I06DF62420	IC	M62420SP
IC352	BZ611035	I0FSP75220	IC	AN7522
⚠ IC401	BZ611025	I03TD80400	IC	LA78040
⚠ IC501	BZ611007	I1KA978050	IC	KIA7805PI
⚠ IC502	BZ611036	I2BT06624G	IC	STR-G6624
⚠ IC506	BZ410055	0002500450	PHOTO COUPLER	TLP621(GR)
IC601	BZ611037	I06FC1203C	IC	M61203CFP
⚠ IC603	BZ611031	I1KA978090	IC	KIA7809PI
IC1001	BZ611042	I56F57043B	IC	OEC7043B

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
			ICS	
IC1002	BZ611012	I9UJ0T600H	IC	PST600H
IC1003	BZ611018	I07SQ69550	IC	BA6955N
IC1099	BZ610073	A57201B015	IC	S-24C04BDP-LA
IC4001	BZ611039	I03F31067M	IC	LA71067M-MPB
IC5501	BZ611024	I01F62FBP0	IC	AN3662FBP
			TRANSISTORS	
Q350	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q401	BZ510004	TA3T016240	TRANSISTOR,SILICON	2SA1624-AA
Q402	BZ510024	TNYTJ03001	COMPOUND TRANSISTOR	DTC114TSTP
Q403	BZ510024	TNYTJ03001	COMPOUND TRANSISTOR	DTC114TSTP
Q404	BZ510034	TA5T010154	TRANSISTOR,SILICON	2SA1015Y(TPE2)
⚠ Q405	BZ510027	TC3Q026210	TRANSISTOR,SILICON	2SC2621(D,E)-RAC
⚠ Q406	BZ510040	TDUU024990	TRANSISTOR,SILICON	2SD2499(LBOEC1)
Q407	BZ510012	TC5T018154	TRANSISTOR,SILICON	2SC1815Y(TPE2)
Q408	BZ510034	TA5T010154	TRANSISTOR,SILICON	2SA1015Y(TPE2)
Q409	BZ510041	TD30016670	TRANSISTOR,SILICON	2SD1667(R,S)
Q410	BZ510024	TNYTJ03001	COMPOUND TRANSISTOR	DTC114TSTP
Q501	BZ510042	TDWT00400E	TRANSISTOR,SILICON	2SD400E
Q502	BZ510005	TA3T1371A0	TRANSISTOR,SILICON	2SA1371(D,E)-AE
Q503	BZ510005	TA3T1371A0	TRANSISTOR,SILICON	2SA1371(D,E)-AE
Q504	BZ510012	TC5T018154	TRANSISTOR,SILICON	2SC1815Y(TPE2)
Q505	BZ510011	TC3T029090	TRANSISTOR,SILICON	2SC2909(S,T)-AA
Q507	BZ510014	TCST009450	TRANSISTOR,SILICON	2SC945(C)-T(P,Q)
⚠ Q508	BZ510008	TB3T008920	TRANSISTOR,SILICON	2SB892(S,T)-AE
Q509	BZ510024	TNYTJ03001	COMPOUND TRANSISTOR	DTC114TSTP
Q512	BZ510011	TC3T029090	TRANSISTOR,SILICON	2SC2909(S,T)-AA
Q513	BZ510023	TNYTB03001	COMPOUND TRANSISTOR	DTC114ESTP
Q601	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
⚠ Q602	BZ510043	TC10013840	TRANSISTOR,SILICON	2SC13840W
⚠ Q603	BZ510043	TC10013840	TRANSISTOR,SILICON	2SC13840W
Q604	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q605	BZ510008	TB3T008920	TRANSISTOR,SILICON	2SB892(S,T)-AE
⚠ Q606	BZ510044	TC5T021204	TRANSISTOR,SILICON	2SC2120Y(TPE2)
Q607	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q609	BZ510045	TNYJD05001	COMPOUND TRANSISTOR	DTC144EKAT146
⚠ Q610	BZ510031	TD3T007340	TRANSISTOR,SILICON	2SD734(E,F)-AA
⚠ Q611	BZ510031	TD3T007340	TRANSISTOR,SILICON	2SD734(E,F)-AA
Q612	BZ510037	TC3T030000	TRANSISTOR,SILICON	2SC3000-AA
⚠ Q801	BZ510027	TC3Q026210	TRANSISTOR,SILICON	2SC2621(D,E)-RAC
⚠ Q802	BZ510027	TC3Q026210	TRANSISTOR,SILICON	2SC2621(D,E)-RAC
⚠ Q803	BZ510027	TC3Q026210	TRANSISTOR,SILICON	2SC2621(D,E)-RAC
⚠ Q810	BZ510046	TC7T1740S0	TRANSISTOR,SILICON	2SC1740SP TP
⚠ Q811	BZ510046	TC7T1740S0	TRANSISTOR,SILICON	2SC1740SP TP
⚠ Q812	BZ510046	TC7T1740S0	TRANSISTOR,SILICON	2SC1740SP TP
Q1001	BZ410049	0002700590	PHOTO COUPLER	RPI-301
Q1002	BZ510002	T8YJ2412K0	TRANSISTOR SILICON	2SC2412KT146 R,S
Q1003	BZ410003	0002G00550	PHOTO COUPLER	GP1S94L
Q1004	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q1005	BZ410049	0002700590	PHOTO COUPLER	RPI-301
Q1009	BZ410003	0002G00550	PHOTO COUPLER	GP1S94L
Q1013	BZ410042	0000100380	PHOTO TRANSISTOR	PNA2604M010R
Q1024	BZ510019	TNYJA05001	COMPOUND TRANSISTOR	DTC143EKAT146
Q2501	BZ510002	T8YJ2412K0	TRANSISTOR SILICON	2SC2412KT146 R,S
Q4001	BZ510033	TC3T033310	TRANSISTOR SILICON	2SC3331(S,T,U)-A
Q4002	BZ510033	TC3T033310	TRANSISTOR SILICON	2SC3331(S,T,U)-A
Q4003	BZ510047	TPYTC03001	COMPOUMD TRANSISTOR	DTA124ESTP
Q4004	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q4005	BZ510003	TA3T013180	TRANSISTOR,SILICON	2SA1318(S,T)-AA
Q4006	BZ510031	TD3T007340	TRANSISTOR,SILICON	2SD734(E,F)-AA
Q4007	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q4008	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q4009	BZ510048	T6YA1037K0	TRANSISTOR,SILICON	2SA1037KT147
Q4010	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q4203	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q4204	BZ510020	TNYJB05001	COMPOUMD TRANSISTOR	DTC114EKAT146
Q4205	BZ510020	TNYJB05001	COMPOUMD TRANSISTOR	DTC114EKAT146
Q4206	BZ510020	TNYJB05001	COMPOUMD TRANSISTOR	DTC114EKAT146
Q4210	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q4211	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q4212	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
			COILS &TRANSFORMERS	
L301	BZ310005	02167D101K	COIL	100 UH
L302	BZ310005	02167D101K	COIL	100 UH
L401	BZ310004	021679472K	COIL	4.7 MH
⚠ L402	BZ310063	022100027A	COIL,LINEARITY	ELH5L4113
L481	BZ310064	02D8000012	TIB PIN PHASE COIL	D8000012
⚠ L501	BZ310065	029X000088	COIL,LINE FILTER	SS24V-15045

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
			COILS &TRANSFORMERS	
⚠ L503	BZ310066	028R200024	COIL,DEGAUSS	8R200024
L602	BZ310012	021LA6R56M	COIL	0.56 UH
L603	BZ310002	021673101K	COIL	100 UH
L605	BZ310009	021LA62R2K	COIL	2.2 UH
L607	BZ310067	021LA6180K	COIL	18 UH
L608	BZ310002	021673101K	COIL	100 UH
L610	BZ310005	02167D101K	COIL	100 UH
L614	BZ310068	021LA66R8K	COIL	6.8 UH
L615	BZ310005	02167D101K	COIL	100 UH
L616	BZ310005	02167D101K	COIL	100 UH
L617	BZ310022	02A6A8A0A1	CORE,FERRITE	HF57T18.5*10*10
L801	BZ310069	02167D151K	COIL	150 UH
L802	BZ310070	02167D820K	COIL	82 UH
L804	BZ310070	02167D820K	COIL	82 UH
L1001	BZ310009	021LA62R2K	COIL	2.2 UH
L4001	BZ310039	02167F220J	COIL	22 UH
L4002	BZ310040	02167F470J	COIL	47 UH
L4003	BZ310001	021673101J	COIL	100 UH
L4004	BZ310024	0326230038	COIL,TRAP	2623003
L4005	BZ310039	02167F220J	COIL	22 UH
L4007	BZ310042	021LA6101K	COIL	100 UH
L4010	BZ310041	02167F101J	COIL	100 UH
L4205	BZ310002	021673101K	COIL	100 UH
L5501	BZ310002	021673101K	COIL	100 UH
L5503	BZ310071	021LA6820K	COIL	82 UH
L5504	BZ310039	02167F220J	COIL	22 UH
L5505	BZ310039	02167F220J	COIL	22 UH
L5506	BZ310041	02167F101J	COIL	100 UH
T401	BZ310072	045013001J	TRANS.,HORIZONTAL DRIVE	5013001
⚠ T501	BZ310073	0481350524	TRANSFORMER,SWITCHING	81350524
T4001	BZ310023	031626007S	COIL,BIAS OSC	1626007
			JACKS	
⚠ J351	BZ614002	060G131014	RCA JACK	HTJ-035-28A
J701	BZ614114	0602431013	RCA JACK	JPJ1187-010010
⚠ J801	BZ614115	066C130017	SOCKET,CATHODE RAY TUBE	CVT3275-5101
J4201	BZ614116	060Q431016	RCA JACK	AV3-19S-1
J4202	BZ614117	060Q411012	RCA JACK	AV3-19-1
			SWITCHES	
SW751	BZ612001	0504201T31	SWITCH,TACT	SKHVBED010
SW791	BZ612001	0504201T31	SWITCH,TACT	SKHVBED010
SW792	BZ612001	0504201T31	SWITCH,TACT	SKHVBED010
SW793	BZ612001	0504201T31	SWITCH,TACT	SKHVBED010
SW794	BZ612001	0504201T31	SWITCH,TACT	SKHVBED010
SW795	BZ612001	0504201T31	SWITCH,TACT	SKHVBED010
SW796	BZ612001	0504201T31	SWITCH,TACT	SKHVBED010
SW797	BZ612001	0504201T31	SWITCH,TACT	SKHVBED010
SW798	BZ612001	0504201T31	SWITCH,TACT	SKHVBED010
SW799	BZ612001	0504201T31	SWITCH,TACT	SKHVBED010
SW1001	BZ612002	0508221001	SWITCH (LEAF)	SPVF130100
			VARIABLE RESISTORS	
VR401	BZ210101	V1163H4BTC	VOLUME,SEMI FIXED	EVNCYAA03BE4
VR402	BZ210101	V1163H4BTC	VOLUME,SEMI FIXED	EVNCYAA03BE4
VR502	BZ210024	V1163L2BTC	VOLUME,SEMI FIXED	EVNCYAA03BY2
VR6001	BZ210068	V1163Q3BTC	VOLUME,SEMI FIXED	EVNCYAA03BQ3
			P.C.BOARD ASSEMBLIES	
PCB010	BZ610074	A57201B01A	PCB ASS'Y	VMX188A
PCB030	BZ610075	A57201B03A	PCB ASS'Y	TEXA33A
PCB070	BZ610076	A57201B07A	PCB ASS'Y	TMX465B
PCB110	BZ610077	A57201B11A	PCB ASS'Y	TCX328B
PCB550	BZ610053	A4C831B550	SEE CHASSIS REPLACEMENT PARTS LIST	
			MISCELLANEOUS	
B301	BZ310016	024AT03655	CORE,BEADS	BL01RN1-A63T6
B502	BZ310015	024AT03482	CORE,BEADS	BL02RN2-R62T4
B504	BZ310016	024AT03655	CORE,BEADS	BL01RN1-A63T6
B505	BZ310015	024AT03482	CORE,BEADS	BL02RN2-R62T4
B4002	BZ310045	024AT03481	CORE,BEADS	BL02RN1-R62T2
BL001	BZ310014	023C00022A	COIL BALUN	HPN-01
CD355	BZ614118	06CH12439A	CORD CONNECTOR	CH12439A
CD356	BZ614119	06CH12440A	CORD CONNECTOR	CH12440A
⚠ CD501	BZ614053	120R614909	CORD AC	0R614909
CD702	BZ614120	06CH2B032A	CORD CONNECTOR	CH2B032A
CD757	BZ614121	06CH2A012A	CORD CONNECTOR	CH2A012A
CD802	BZ614122	06CP82035A	CORD CONNECTOR	CP82035A
CD810	BZ614123	06CH28112A	CORD CONNECTOR	CH28112A
CD850	BZ614062	06CH25086A	CORD CONNECTOR	CH25086A
CF601	BZ613014	1022T45R72	FILTER,SAW	SAF45MFY220ZR
CF603	BZ613015	1011T4R504	FILTER,CERAMIC	EFCT4R5YS5A

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
			MISCELLANEOUS	
CF604	BZ613016	1011T4R517	FILTER,CERAMIC	EFCT4R5MW5
⚠ CP401	BZ614020	069X450029	CONNECTOR PCB SIDE	B05B-DVS
⚠ CP501	BZ614012	0697320039	CORD UX CONNECTOR	THL-P03P-B1
⚠ CP502	BZ614018	069W420029	CONNECTOR PCB SIDE	TV-50P-02-A1
CP601	BZ614103	06CH2D068A	CORD CONNECTOR	CH2D068A
CP602	BZ614039	069E270129	CONNECTOR PCB SIDE	8283_0712_00_000
CP801	BZ614058	069W010010	CONNECTOR PCB SIDE	005P-2100
CP802	BZ614017	069W320018	CONNECTOR PCB SIDE	TS-80P-02-V1
CP805	BZ614013	069E250129	CONNECTOR PCB SIDE	8283_0512_00_000
CP810	BZ614105	069E280129	CONNECTOR PCB SIDE	8283_0812_00_000
CP820	BZ614106	069E2D0129	CONNECTOR PCB SIDE	8283_1312_00_000
CD4203	BZ614124	06CH01812A	CORD EIS CONNECTOR	CH01812A
CP1004	BZ614010	0697280590	CONNECTOR PCB SIDE	TMC-J08P-B1
CP1005	BZ614049	069J750029	CONNECTOR PCB SIDE	IMSA-9604S-05Z14
CP1006	BZ614014	069J740029	CONNECTOR PCB SIDE	IMSA-9604S-04Z14
CP4001	BZ614011	0697290620	CONNECTOR PCB SIDE	TOC-C09X-A1
CP4002	BZ614050	069J760029	CONNECTOR PCB SIDE	IMSA-9604S-06Z14
CP4003	BZ614009	0697120320	CONNECTOR PCB SIDE	TMC-T02X-E1
CP4201	BZ614047	069E2A0129	CONNECTOR PCB SIDE	8283_1012_00_000
CP4202	BZ614048	069E2B0129	CONNECTOR PCB SIDE	8283_1112_00_000
CP803A	BZ614006	067R105019	WIRE HOLDER	51052-0500
CP803B	BZ614006	067R105019	WIRE HOLDER	51052-0500
EL001	BZ614043	124116281A	EYE LET	XRY16X28BD
EL002	BZ614044	124120301A	EYE LET	XRY20X30BD
⚠ F501	BZ614125	081PC6R304	FUSE	51MS 6.3A L CC
⚠ F502	BZ614126	081PC2R504	FUSE	51MS 2.5A L CC
⚠ FB401	BZ310074	043221011Q	TRANSFORMER,FLYBACK	3221011Q
FH501	BZ614005	06710T0006	HOLDER,FUSE	EYF-52BC
FH502	BZ614005	06710T0006	HOLDER,FUSE	EYF-52BC
FH503	BZ614005	06710T0006	HOLDER,FUSE	EYF-52BC
FH504	BZ614005	06710T0006	HOLDER,FUSE	EYF-52BC
OS753	BZ614127	077Q000019	REMOTE RECEIVER	PIC-28143TC5
⚠ RY501	BZ612008	0560Q20114	RELAY	SDT-S-112LMR
⚠ SP351	BZ614128	070W133014	SPEAKER	P-300S-2
⚠ SP352	BZ614128	070W133014	SPEAKER	P-300S-2
⚠ TH501	BZ410056	DF20A3R0Q0	DEGAUSS ELEMENT	PTH451A3R0Q11
TM101	BZ614129	076N0DQ010	TRANSMITTER	VC-FK20S
⚠ TU601	BZ610078	0145K00053	TUNER,VHF-UHF	TECC1040PG32A
⚠ V801	BZ614130	098W210419	CRT W/DY	A51LSH196X01(O)
X602	BZ613004	100CT3R505	CRYSTAL	HC-49/C
X1001	BZ613002	100CT01207	CRYSTAL	HC-49/U-S
X1002	BZ613006	100DA32R01	CRYSTAL	DT-26
X4001	BZ613008	100CF3R512	CRYSTAL	HC-49/U

RESISTOR

RC.....	CARBON RESISTOR

CAPACITORS

CC.....	CERAMIC CAPACITOR
CE.....	ALUMI ELECTROLYTIC CAPACITOR
CP.....	POLYESTER CAPACITOR
CPP.....	POLYPROPYLENE CAPACITOR
CPL.....	PLASTIC CAPACITOR
CMP.....	METAL POLYESTER CAPACITOR
CMPL.....	METAL PLASTIC CAPACITOR
CMPP.....	METAL POLYPROPYLENE CAPACITOR

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